# TM 8-634

WAR DEPARTMENT TECHNICAL MANUAL



# DENTAL X-RAY MACHINE

## (ITEMS 6088005, 6088010)



*WAR DEPARTMENT · JANUARY 1945*

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WAR DEPARTMENT
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TM 8–634, Dental X-ray Machine (Items 6088005, 6088010) is published for the information and guidance of all concerned.

[AG 300.7 (2 Jan 45)]

BY ORDER OF THE SECRETARY OF WAR:

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For explanation of symbols, see FM 21–6.

# CONTENTS

PART ONE

# INTRODUCTION

## Section I. GENERAL

**1. SCOPE.** **a.** These instructions are published for the information and guidance of all personnel to whom this equipment is assigned. They contain information on the operation and 1st and 2d echelon maintenance of the equipment, as well as descriptions of the major units and their function in relation to the other components of the equipment. They apply to dental X-ray machines manufactured by H. G. Fischer and Co., X-ray Mfg. Corp. of America, and Weber Dental Mfg. Co.

**b.** These instructions are arranged in three parts: Part One, Introduction; Part Two, Operating Instructions; Part Three, Maintenance Instructions.

**c.** All requisitions for spare parts should be submitted in accordance with the latest revision of ASF Supply Catalog Med–7.

**2. RECORDS.** No special maintenance forms are required to be kept by the using personnel except as may be prescribed by the medical officer in charge.

## Section II. DESCRIPTION AND DATA

**3. DESCRIPTION.** **a. General information.** The dental X-ray machine is a mobile unit with a flexible extension arm which provides for positioning of the X-ray tube head in dental radiography. This manual covers Model ADX manufactured by H. G. Fischer and Co.; Model XRM 1A manufactured by X-ray Mfg. Corp. of America; Model 7 manufactured by Weber Dental Mfg. Co.

**b. Difference in models.** (1) The counterbalance model uses a system of counterweights and pulleys to control the vertical movement of the extension arm.

(2) The hand crank model uses a crank and gear assembly system to control the vertical movement of the extension arm.

**4. DATA.** **a. Item No. 6088005.** Operates on a voltage range of 100–130 volts, 60 cycles, single phase.

**b. Item No. 6088010.** Operates on a voltage range of 100–130 volts, 50 cycles, single phase.

**5. MANUFACTURERS.** **a.** H. G. Fischer and Co., 2323–2345 W. Wabansia Avenue, Chicago, 47, Illinois.

**b.** X-ray Mfg. Corporation of America, New York City, New York.

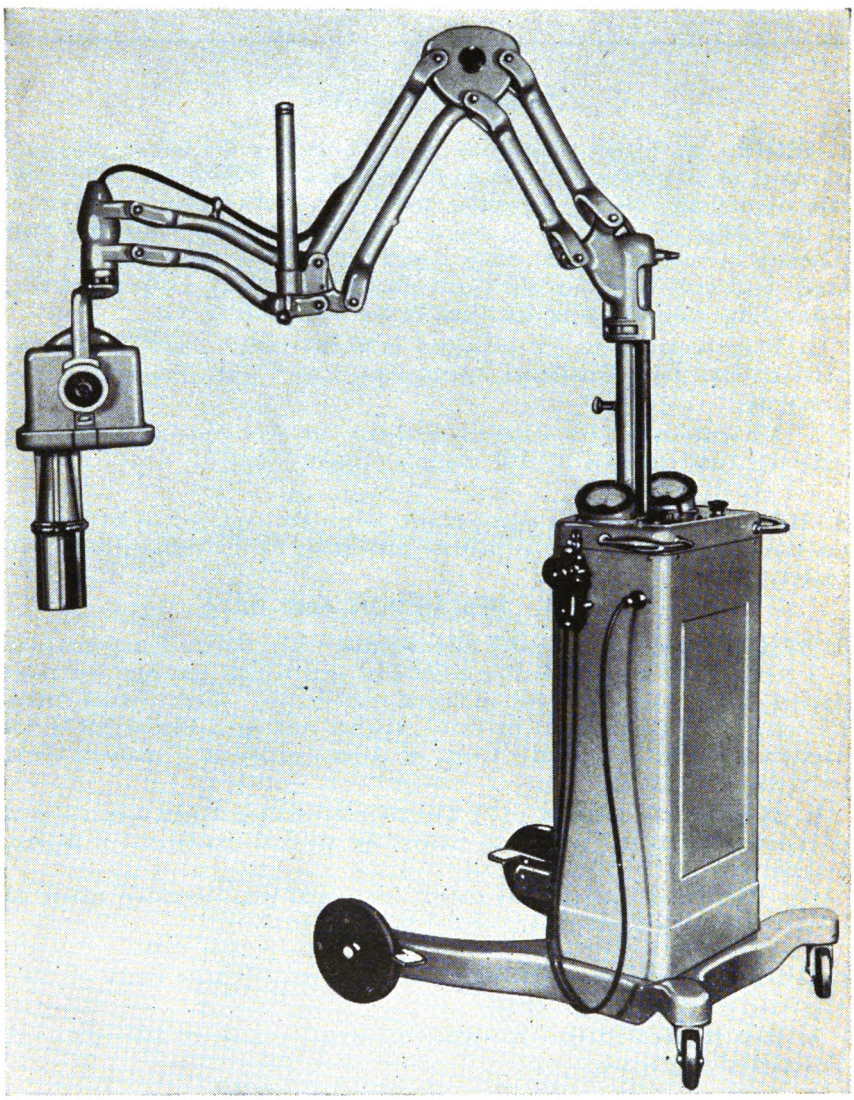
**c.** Weber Dental Mfg. Co., Crystal Park, Canton, Ohio.

## Section III. ACCESSORIES

**6. ACCESSORIES. a. Fischer model.** (1) Dental cone.
(2) Radiographic cone.
(3) Timer.

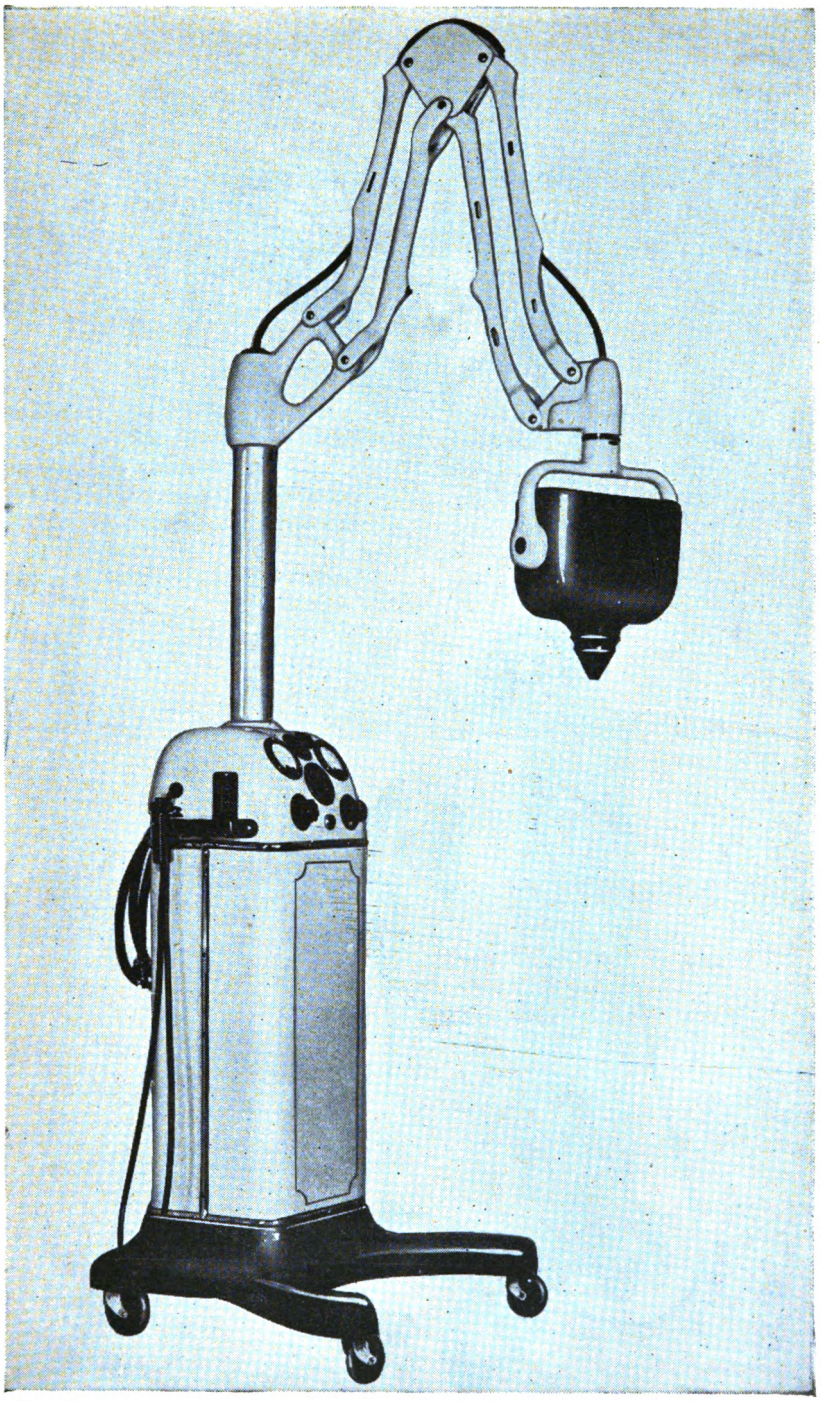
**b. X-Ray Mfg. Corporation model.** Dental cone.

**c. Weber model.** (1) Timer, complete with cord and plug.
(2) Dental cone.



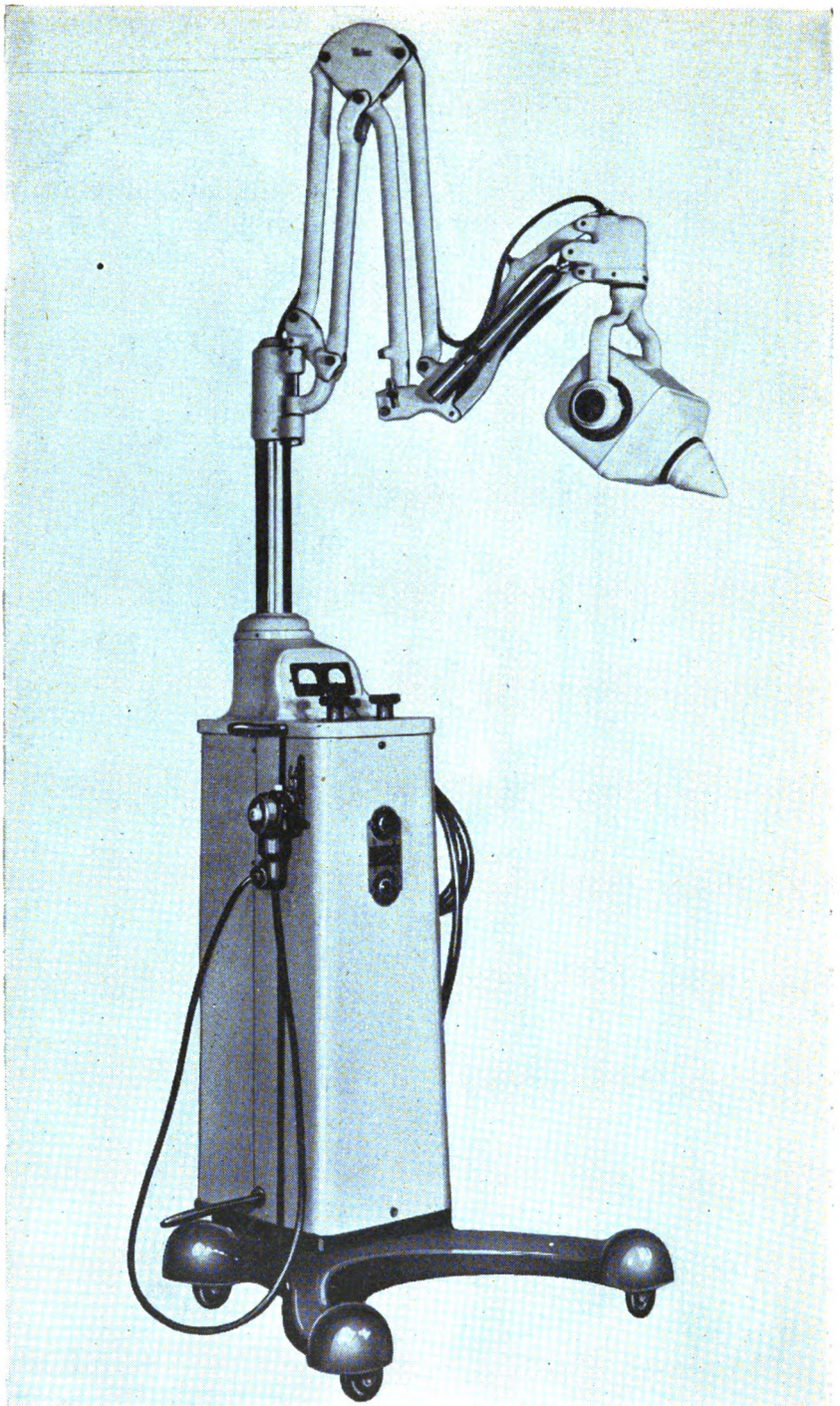
| Med. Dept. Item | Nomenclature |
|---|---|
| 6088005 | Machine, X-ray, dental, shockproof, complete, 110 volt, 60 cycle. |
| 6088010 | Machine, X-ray, dental, shockproof, complete, 110 volt, 50 cycle. |

*Figure 1. Dental X-ray machine manufactured by H. G. Fischer and Co.*



| Med. Dept. Item | Nomenclature |
|---|---|
| 6088005 | Machine, X-ray, dental, shockproof, complete, 110 volt, 60 cycle. |
| 6088010 | Machine, X-ray, dental, shockproof, complete, 110 volt, 50 cycle. |

*Figure 2. Dental X-ray machine manufactured by X-ray Mfg. Corporation of America.*



| Med. Dept. Item | Nomenclature |
|---|---|
| 6088005 | Machine, X-ray, dental, shockproof, complete, 110 volt, 60 cycle. |
| 6088010 | Machine, X-ray, dental, shockproof, complete, 110 volt, 50 cycle. |

*Figure 3. Dental X-ray machine manufactured by Weber Dental Mfg. Co.*

## PART TWO

# OPERATING INSTRUCTIONS

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### Section IV. GENERAL

**7. SCOPE.** Part Two contains information for the guidance of the personnel responsible for the operation of the equipment. It contains information on the operation of the equipment with a description and location of the controls and instruments. It is divided into three parts: Part Two–A, Operating Instructions, Fischer model; Part Two–B, Operating Instructions, X-ray Mfg. Corporation model; Part Two–C, Operating Instructions, Weber model.

PART TWO-A

# OPERATING INSTRUCTIONS

# FISCHER MODEL

## Section V. SERVICE UPON RECEIPT OF EQUIPMENT

**8. UNPACKING. a.** The unit is shipped in three crates complete with accessories.

(1) Crate No. 1 contains the tube head with oil immersed tube, transformer, and attached tube head hanger.

(2) Crate No. 2 contains the base and control unit with the vertical column.

(3) Crate No. 3 contains the extension arm, cone, and hand timer.

**b.** Carefully open crates 1, 2, and 3 and remove all paper and packing materials.

**c.** Remove the equipment to place of assembly.

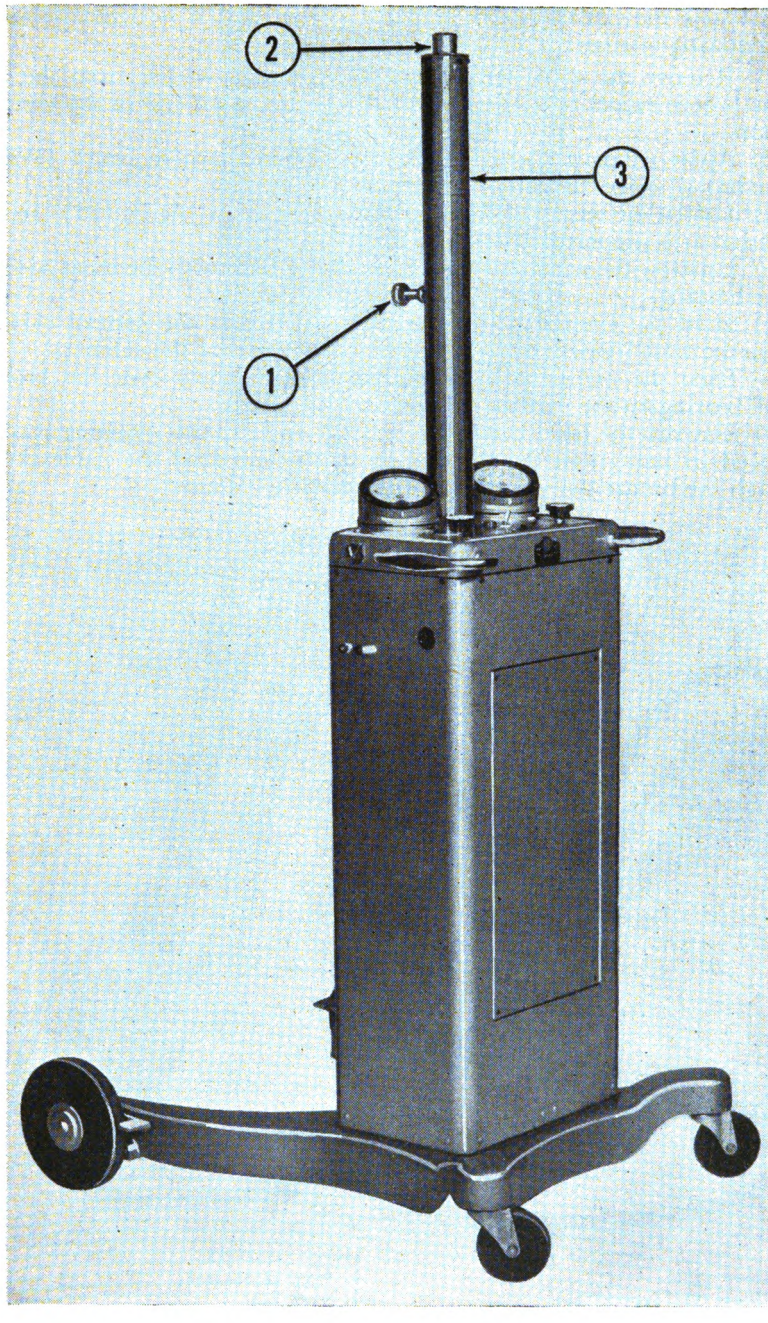
***Caution:*** Place the dental cone and timer where they will not be damaged.

**9. ASSEMBLING COUNTERBALANCE MODEL. a.** Remove the two nuts located under the base which secure the counterweights against movement during transit. These nuts are wired to prevent them from becoming loose in transit.

**b.** Open the control cabinet panel or, if it is fastened on with screws, remove the panel and locate the two base supports for the tubes which contain the two counterweights. At the front of each support and at its upper edge is located a locking screw, which must be removed. Each locking screw prevents its counterweight from rotating while the securing nut is being removed. These locking screws must not be removed until the two nuts which secure the counterweights have been removed, or the chains which are connected to the counterweights may be twisted with the possibility of resulting damage.

**c.** Loosen the knurled thumb screw (fig. 4, (1)) on the vertical column and pull down forcibly on the top of the column to test the counterweight assembly. Be sure that the counterweight chains have equal tension. Allow the vertical column to rise to the upper limits of travel and if slack is observed in either chain, it must be adjusted. To adjust them see paragraph 39.

**d.** Before installing the tube head or extension arm, be certain that the vertical column (fig. 4, (3)) is at the upper limits of its travel and is locked securely with the knurled thumb screw.




1. **Vertical column knurled thumb screw.**
2. **Vertical column bronze swivel bearing.**
3. **Vertical column.**

*Figure 4. Control unit, Fischer Model—front view.*

**e.** Attach the extension arm assembly (fig. 5) to the vertical column in the following manner:

(1) Remove the three screws and the retaining washer from the top of the bronze swivel bearing (fig. 4, (2)) at the upper end of the vertical column.

(2) Apply a heavy coating of Grease, general purpose No. 2 (WB2) to the bronze swivel bearing.

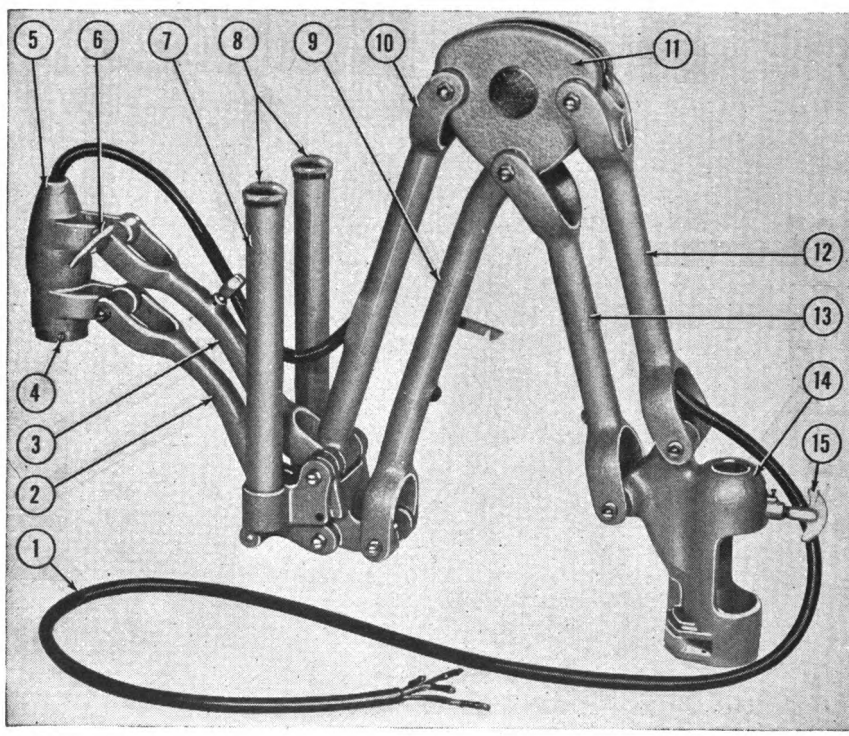
(3) Loosen the setscrew which locks the wing screw (fig. 5, (15)) in the extension arm support housing (fig. 5, (14)).

(4) Unscrew the wing screw until its point is flush with the inner surface of the housing.

(5) Hold the extension arm assembly away from the control cabinet and so the wing screw is directly over the center line of the cabinet.

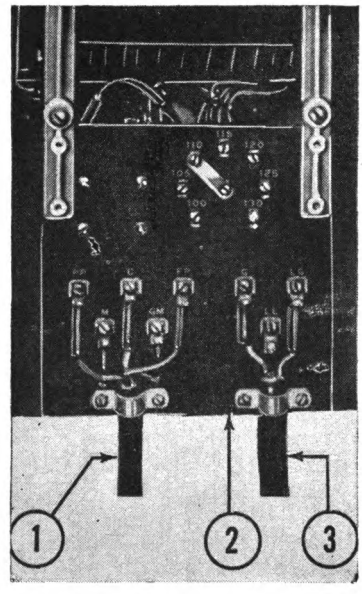
(6) Slide the extension arm support housing down over the bronze swivel bearing on the vertical column.

(7) Unwrap the head cable (fig. 5, (1)) and slip the retaining washer removed in paragraph 9e(1) over the cable and feed the cable down through the bronze swivel bearing of the vertical column.




1. **Head cable.**
2. **Lower tube support arm.**
3. **Upper tube support arm.**
4. **Screw, 8-32 x 7/16 inch, O.H.M.**
5. **Tube head support.**
6. **Tube head support wing nut.**
7. **Counterbalance tube.**
8. **Counterbalance tube cap.**
9. **Front center arm.**
10. **Front arm.**
11. **Pivot head for arms.**
12. **Rear arm.**
13. **Rear center arm.**
14. **Extension arm support housing.**
15. **Extension arm support wing screw.**

*Figure 5. Extension arm assembly, Fischer Model.*




1. **Head cable.**
2. **Terminal panel.**
3. **Line cable.**

*Figure 6. Terminal panel, Fischer Model.*

(8) Fasten the retaining washer to the top of the bronze swivel bearing with the three screws removed in paragraph 9e(1).

(9) Tighten wing screw and setscrew loosened in paragraph 9e(3) and (4).

**f.** Connect the terminals of the head cable (fig. 6, (1)) to the terminal panel of the control cabinet, placing each terminal of the cable on the stud with the letter corresponding to the letter on the terminal panel. Tighten the cable clamp over the cable.

**g.** Attach the tube head (fig. 7) to the extension arm in the following manner:

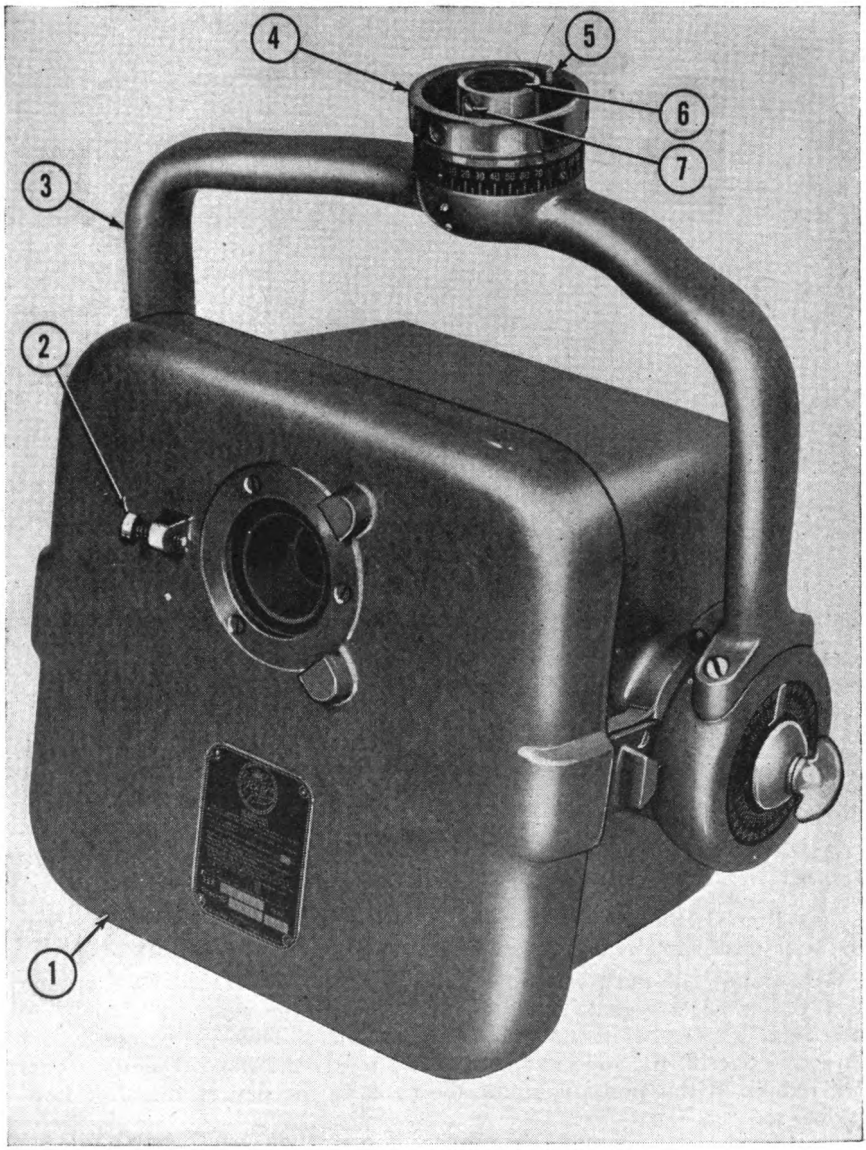
(1) Remove the three support screws (SR00960) (fig. 5, (4)) found in the tube head support of the extension arm.

(2) Rotate the male receptacle until the slot on the receptacle casting (fig. 8, view 2) comes to rest somewhere within the wide slot of the stop and retaining washer of the tube head support. This will place the slot directly opposite the tube head support pin. If the male receptacle does not remain in this position, rotate the cable in the desired direction until it does so.

(3) The stop pin on the rotating ring (fig. 8, view 3) must be near the slot found on the tube head support. This prevents the stop pin on the rotating ring from riding on the top of the stop on the stop-and-retaining washer.

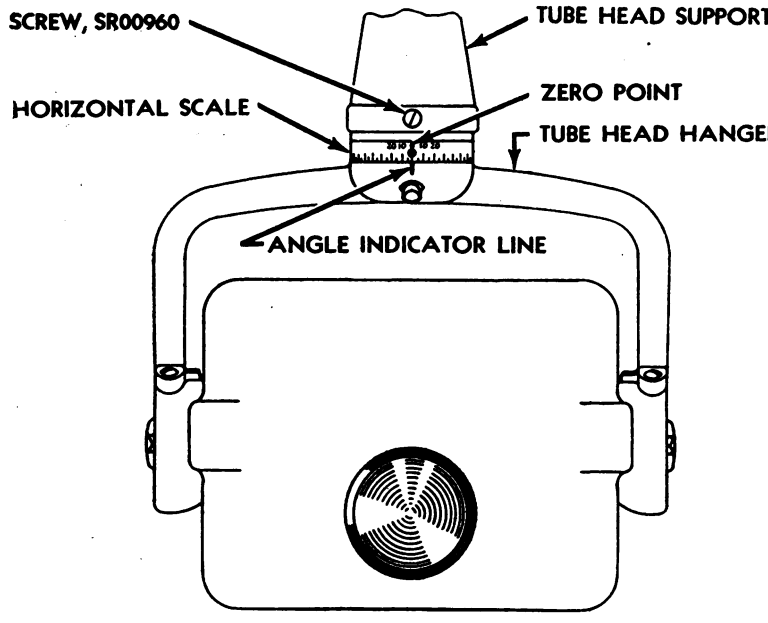
(4) Hold the tube head assembly so that the tube head hanger can be lifted up and slid into the tube head support and so that the key of the

retaining assembly will enter the slot in the stop-and-retaining washer and male receptacle casting which were lined up in paragraph 9g(2), and with the angle indicator line (fig. 8, view 1), on the retaining assembly meeting zero of the horizontal scale. The pin on the tube head support should meet the slot on the retaining assembly.

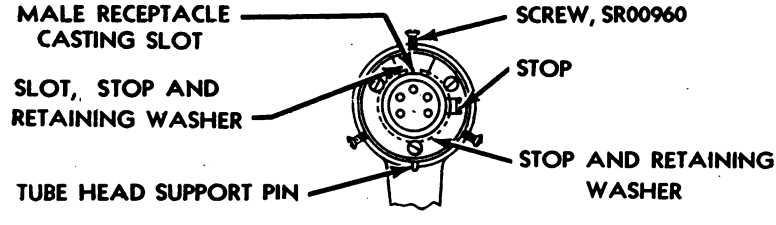



1. Tube head.
2. Cone retaining thumb screw.
3. Tube head hanger.
4. Retaining assembly ring.
5. Retaining assembly slot.
6. Tube head hanger female receptacle.
7. Retaining assembly key.

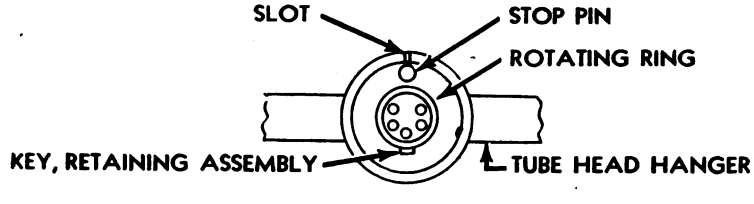
*Figure 7. 6R50002, Head, complete: Fischer Model.*




VIEW 1. TUBE HEAD ASSEMBLY




VIEW 2. TUBE HEAD SUPPORT




VIEW 3. RETAINING ASSEMBLY

*Figure 8. Tube head mounting assemblies, Fischer Model.*

(5) Insert the three support screws removed in paragraph 9g(1), and tighten them.

***Caution:*** The tube head assembly must be held firmly when inserting the screws. It is advisable to use two men since the tube head assembly is quite heavy.

**h.** Connect the line cable terminal *LG* to the grounded line wire, terminal *LL* to the ungrounded line wire, and terminal *G* to the ground wire. (See fig. 6, (3).)

**i.** Attach the line cable to a 100–130 volt a-c line.

**j.** Plug the timer plug into the receptacle on the left side of the control cabinet and hang the timer on the timer hook.

**10. ASSEMBLING HAND CRANK MODEL.** **a.** Attach the extension arm to the vertical column in the following manner:

(1) Remove the three screws and the retaining washer from the top of the bronze swivel bearing at the upper end of the vertical column.

(2) Apply a heavy coating of Grease, general purpose No. 2 (WB2) to the bronze swivel bearing.

(3) Loosen the set screw which locks the wing screw (fig. 5, (15)) in the extension arm support housing (fig. 5, (14)).

(4) Unscrew the wing screw until its point is flush with the inner surface of the housing.

(5) Hold the extension arm assembly away from the cabinet and so the wing screw is directly over the center line of the cabinet.

(6) Slide the extension arm support housing down over the bronze swivel bearing on the vertical column.

(7) Unwrap the head cable and slip the retaining washer removed in paragraph 10a(1), over the cable and feed the cable down through the bronze swivel bearing on the vertical column.

(8) Fasten the retaining washer to the top of the bronze swivel bearing with the three screws removed in paragraph 10a(1).

(9) Tighten wing screws and setscrew loosened in paragraph 10a(3) and (4).

**b.** Remove the control cabinet panel by removing the four screws holding it in place.

**c.** Connect the terminals of the head cable (fig. 6, (1)) to the terminal panel of the control cabinet, placing each terminal on the stud similarly marked. Tighten the cable clamp over the cable.

**d.** Attach the tube head (fig. 7) to the extension arm in the following manner:

(1) Remove the three support screws (SR00960) (fig. 5, (4)) found in the tube head support of the extension arm.

(2) Rotate the male receptacle until the slot on the receptacle casting (fig. 8, view 2) comes to rest somewhere within the wide slot of the stop and retaining washer of the tube head support. This will place the slot directly opposite the tube head support pin. If the male receptacle does not remain in this position, rotate the cable in the desired direction until it does so.

(3) The stop pin on the rotating ring (fig. 8, view 3) must be near the slot found on the tube head support. This prevents the stop pin on the rotating ring from riding on the top of the stop and retaining washer.

(4) Hold the tube head assembly so that the tube head hanger can be lifted up and slid into the tube head support and so that the key of the retaining assembly will enter the slot in the stop and retaining washer and male receptacle casting which were lined up in paragraph 10d(2), and with the angle indicator line (fig. 8, view 1) on the retaining assembly meeting zero of the horizontal scale. The pin on the tube head support should meet the slot on the retaining assembly.

(5) Insert the three support screws removed in paragraph 10d(1), and tighten them.

***Caution:*** The tube head assembly must be held firmly when inserting the screws. It is advisable to use two men since the tube head assembly is quite heavy.

**e.** Connect the line cable terminal *LG* to the grounded line wire, terminal *LL* to the ungrounded line wire, and terminal *G* to the ground wire. (See fig. 6, (3).)

**f.** Attach the line cable to a 100–130 volt a-c line.

**g.** Plug the timer plug into the receptacle on the left side of the control cabinet and hang the timer on the timer hook.

**11. ADJUSTMENTS. a. Line adjuster strap.** The line adjuster strap is located on the terminal panel of the control unit. Set this strap on the terminal most nearly corresponding to the line voltage. For example, if the line voltage reads 113, the line adjuster strap should be set on the 115 terminal.

## Section VI. CONTROLS AND INSTRUMENTS

**12. CONTROLS. a. Circuit breaker.** The circuit breaker is located at the bottom center of the control panel. It serves as a safety device to open the operating circuit in case the high tension transformer or tube is overloaded. The contacts of the circuit breaker are reset by turning the circuit breaker to the "on" position.

**b. Filament control.** The filament control is located at the left end of the control panel. It serves to regulate the filament current to the X-ray tube. This control is of the rheostat type and can be moved during exposure.

**c. Kilovolt selector.** The kilovolt selector is at the right end of the control panel and is a 12 point selector switch. This control must not be moved during exposure or damage to the switch will result. It serves to regulate the kilovoltage used during the exposure.

**d. Line switch.** The line switch is located in the center of the control panel and above the circuit breaker. This switch serves to open and close both sides of the incoming line to the autotransformer. When the line switch is turned "on" the kilovolt meter should indicate, the X-ray filament should light, and the pilot lamp should light.

**e. Timer.** The timer is plugged into the side of control unit cabinet and hangs on the timer hook on the same side of the cabinet. The timer is used to determine the exposure time for radiography and is driven by a mechanical clock mechanism.

**f. Line adjuster strap.** The line adjuster strap is located on the terminal panel of the control unit and serves to adjust the unit to the incoming line voltage. (See par. 11a.)

**13. INSTRUMENTS. a. Voltmeter.** The voltmeter is located at the upper right side of the control unit and is mounted on a swivel bearing which allows the meter to rotate 90°. It has two scales; the lower scale reads a-c volts, and the upper scale reads peak kilovolts.

**b. Milliammeter.** The milliammeter is located at the upper left side of the control unit and is mounted on a swivel bearing which allows the meter to rotate 90°. During exposure the milliammeter indicates the amount of current passing through the X-ray tube. It should be noted that part of the scale is printed in red, indicating that operation is in the danger zone and the milliamperage should be lowered by adjusting the filament control counterclockwise.

## Section VII. OPERATION

**14. RADIOGRAPHY. a.** The tube should be properly positioned with respect to the patient.

**b.** Set the circuit breaker to "on" position.

**c.** Turn the line switch to "on" position. The voltmeter should indicate, the X-ray tube filament should light and the pilot lamp should light.

**d.** Adjust the selector switch to the desired kilovoltage.

***Caution:*** Never exceed 70 kilovolts. (See table 1.)

*Table I. Safe operating limits*

| M.A. | P.K.V. | Time |
|---|---|---|
| 5 | 70 | 20 minutes. |
| 10 | 70 | 2 minutes. |
| 15 | 70 | 18 seconds. |

**e.** The filament control should be set to the desired milliamperage.

***Caution:*** Never exceed 15 M.A. (See table 1.)

**f.** The timer should be set for the desired time by adjusting the indicator to time values marked on the dial. Care should be taken not to press the button on the top of the timer until exposure is desired. For time factor in safe operating limits see table 1.

**g.** Press the button on top of timer for exposure. This will cause the milliammeter to indicate. If the values are higher than desired or within the danger zone of the meter, turn the filament control counterclockwise. If the values are lower than desired, turn the filament control clockwise.

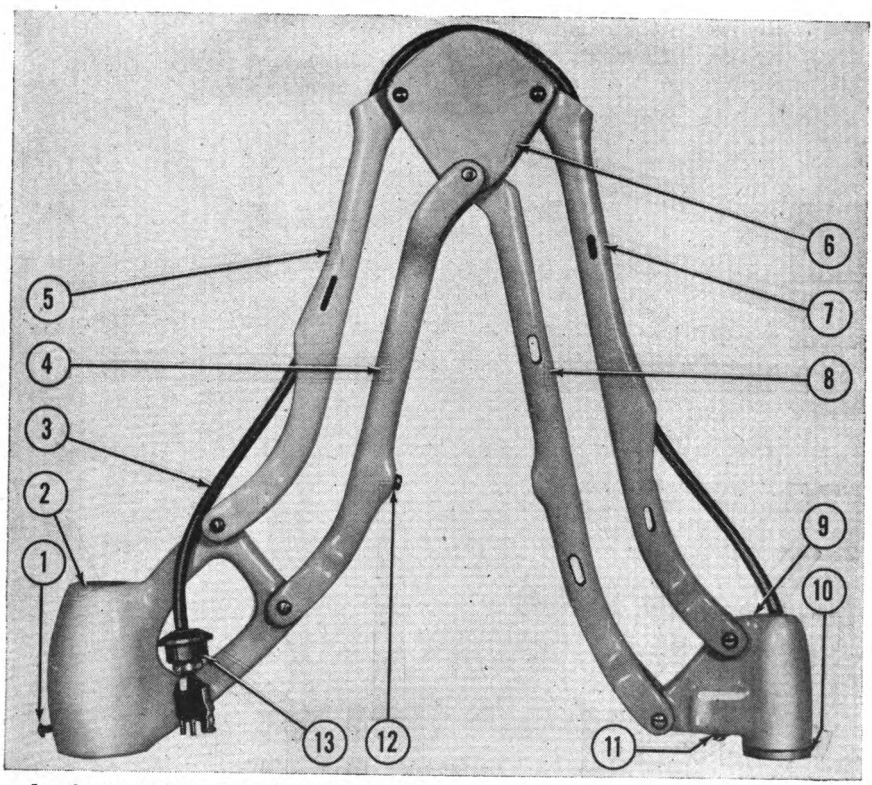
**15. FLUOROSCOPY.** There are no provisions for fluoroscopy with this unit.

# OPERATING INSTRUCTIONS
# X-RAY MFG. CORPORATION MODEL

## Section VIII. SERVICE UPON RECEIPT OF EQUIPMENT

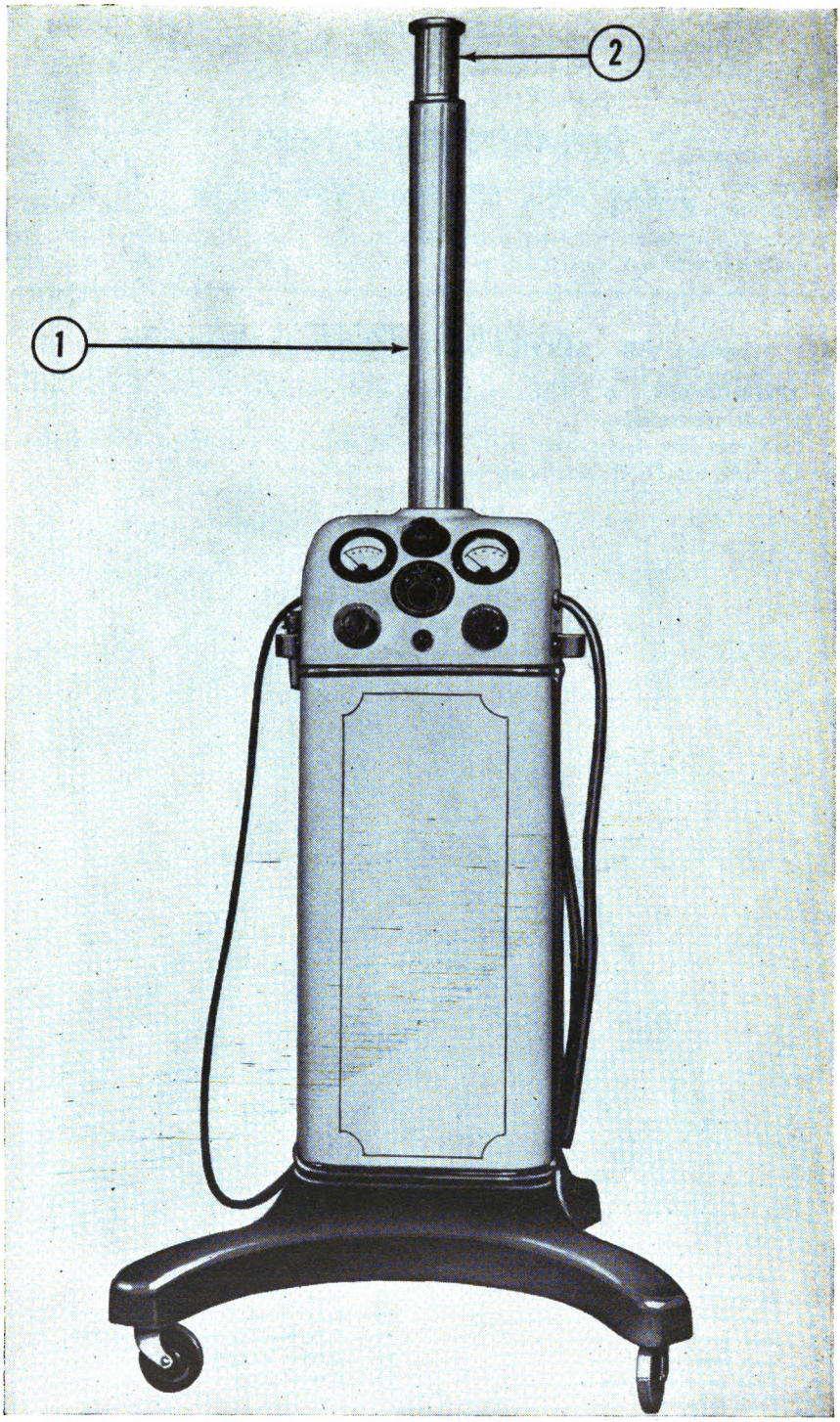
**16. UNPACKING.** **a.** The complete unit is shipped in two crates complete with accessories.

(1) Crate No. 1 contains the tube head with oil immersed tube, transformer, and attached tube head hanger.



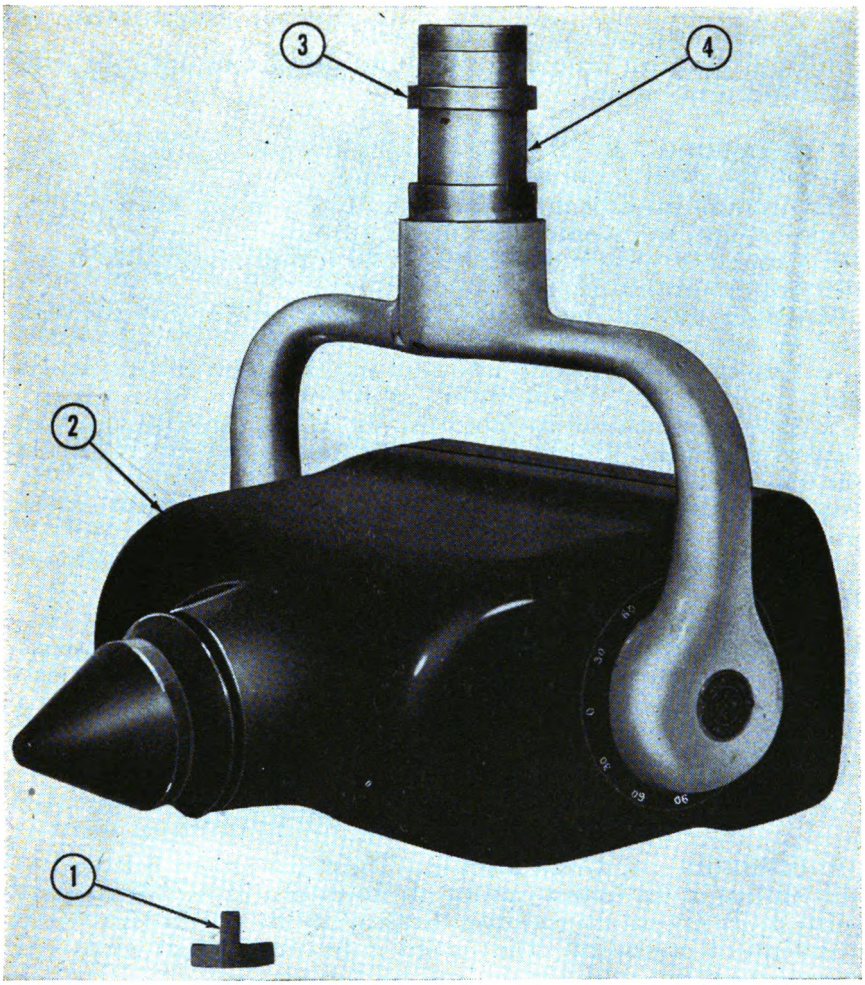

1. Screw, 1/4-20 x 5/8 inch, Phillips R.H.M.
2. Extension arm support.
3. Four wire cable.
4. Rear center arm.
5. Rear arm.
6. Pivot head for arms.
7. Front arm.
8. Front center arm.
9. Tube head support.
10. Tube head support horizontal scale.
11. Tube head retaining clamp bolt.
12. Rubber bumper.
13. Rubber plug.

*Figure 9. Extension arm assembly, X-ray Mfg. Corporation Model.*




**1. Vertical column.** **2. Vertical column arm support tube.**

*Figure 10. Control cabinet, X-ray Mfg. Corporation Model.*




1. "T" for tube head.
2. Tube head.
3. Tube head trunnion.
4. Lower groove of trunnion.

*Figure 11. 6R51002, Head, complete: X-ray Mfg. Corporation Model.*

(2) Crate No. 2 contains the base, control unit with vertical column, and extension arm.

**b.** Remove the front of the large crate. The extension arm is wrapped separately and is fastened to the inside of the front of this crate.

**c.** Remove the extension arm from the front of the crate.

**d.** Remove the wood fastenings from the crate.

***Caution:*** Do not cut the rope which holds down the counterbalanced vertical column or the counterweights will drop and damage may occur.

**e.** Remove the radiographic cone to a safe place, if one is provided.

**f.** Tip the crate up at the rear and allow the unit to slide out of the box.

**g.** Loosen the rope holding down the vertical column and allow the vertical column to rise very slowly.

**h.** Remove all paper and packing materials.

**i.** Open the small crate and remove the dental cone and tube head assembly to a safe place.

**17. ASSEMBLING. a.** Hold the extension arm assembly (fig. 9) so that it is over the center line of the control cabinet.

**b.** Allow the extension arm support (fig. 9, (2)) to slide down over the vertical column arm support tube (fig. 10, (2)).

**c.** Connect the plugs of the head cable and vertical column cable so that they make good connection.

**d.** Loosen the bolt (fig. 9, (11)) in the tube head support and push back the tube head retaining clamp as far as it will go.

**e.** Connect the plugs on the tube head and head cable of the extension arm.

**f.** Slide the trunnion of the tube head (fig. 11, (3)) into the tube head support, placing the "T" (fig. 11, (1)) in the lower groove (fig. 11, (4)) of the trunnion with the large part down.

**g.** Place the clamp pushed back in paragraph 17d in the groove of the trunnion.

**h.** Tighten the bolt of the tube head retaining clamp loosened in paragraph 17d.

**18. ADJUSTMENTS.** The line adjuster strap is located on the terminal board of the control unit. Set the line adjuster strap on the terminal most nearly corresponding to the line voltage, which is determined by means of a voltmeter. The voltmeter on the unit should read 110 volts under load for all settings.

## Section IX. CONTROLS AND INSTRUMENTS

**19. CONTROLS. a. Circuit breaker.** The circuit breaker is located on the left side of the control cabinet. It serves as a line switch and as a safety device to open the operating circuit in case the tube or high tension transformer is overloaded. The contacts of the circuit breaker are reset by turning the circuit breaker to the "on" position.

**b. Filament control.** The filament control is labeled "MA CONTROL" and is located in the lower right corner of the control panel. It serves to regulate the filament current to the X-ray tube. This control is of the rheostat type and can be moved during exposure.

**c. Kilovolt selector.** The kilovolt selector is located in the center of the control panel above the timer. It is a 5 point selector switch with a range from 50 to 70 kilovolts. This control must not be moved during exposure or damage to the equipment will result.

**d. Line switch.** The circuit breaker serves as a line switch, as well as a safety device.

**e. Timer.** The timer is located in the center of the control panel and is of the synchronous type. It has a range from ¼ to 15 seconds. The timer is used to determine the exposure time for radiography and is activated by the push button which hangs on a hook on the left side of the control cabinet.

***Caution:*** A 60 cycle synchronous timer will not properly operate on 50 cycle current. The time factor must be increased when the unit is operated on 50 cycles.

**20. INSTRUMENTS. a. Voltmeter.** The voltmeter is located at the upper left of the control panel. It is a 0–110 a-c voltmeter with the number 110 printed in red. The meter should indicate 110 volt under load at all settings.

**b. Milliammeter.** The milliammeter is located at the upper right side of the control panel. It is a 0–20 MA, d-c meter. During exposure the milliammeter indicates the amount of current passing through the X-ray tube.

**c. Pilot light.** The pilot light is located at the bottom center of the control panel. The pilot light will not light until the timer has been preset. When the pilot light is burning, it indicates that the filament of the X-ray tube is being energized.

## Section X. OPERATION

**21. RADIOGRAPHY. a.** The tube should be properly positioned with respect to the patient.

**b.** Turn the circuit breaker to "on" position. The voltmeter should now indicate.

**c.** Adjust the line compensator so the voltmeter reads 110 volts under load.

**d.** Adjust the kilovolt selector switch to the desired kilovoltage.

**e.** Adjust the filament control to the desired milliamperage.

**f.** Set the timer for the desired time by adjusting the indicator to time values marked on the dial. Care should be taken not to press the timer push button on the left side of the control panel until exposure is desired.

**g.** Press the timer push button for exposure. If the MA values are higher than desired, turn the filament control counterclockwise. If the MA values are lower than desired, turn the filament control clockwise.

**22. FLUOROSCOPY.** There are no provisions for fluoroscopy with this unit.

# OPERATING INSTRUCTIONS

# WEBER MODEL

## Section XI. SERVICE UPON RECEIPT OF EQUIPMENT

**23. UNPACKING. a.** The complete unit is packed in five crates complete with accessories.

(1) Crate No. 1 contains the base, casters, and attaching bolts.
(2) Crate No. 2 contains the counterweights.
(3) Crate No. 3 contains the control cabinet with vertical column.
(4) Crate No. 4 contains the extension arm, timer, and accessories.
(5) Crate No. 5 contains the tube head assembly.

**b.** Open all crates carefully, remove the contents and unwrap.

**c.** Remove the equipment to place of assembly.

***Caution:*** Place the dental cone and timer where they will not be damaged.

**24. ASSEMBLING. a.** Fasten the control cabinet to the base by means of the attaching bolts.

**b.** Assemble the counterweights in the following manner:

(1) Remove the front panel by taking out the two special screws and lifting off the panel.

(2) Remove the rear panel by removing the screws and lifting off the panel.

(3) Remove the screws that hold the square counterweight guide rods. (See fig. 12, (3).)

(4) Remove the rods and insert them in the grooves of the counterweights. (See fig. 12, (2).)

(5) Insert the round ends of the rods through the counterweight springs (fig. 12, (1)) and into the holes of the base.

(6) Secure the rods in the pulley support brackets. (See fig. 12, (7).) Be certain to have the rounded ends of the counterweights toward the outside.

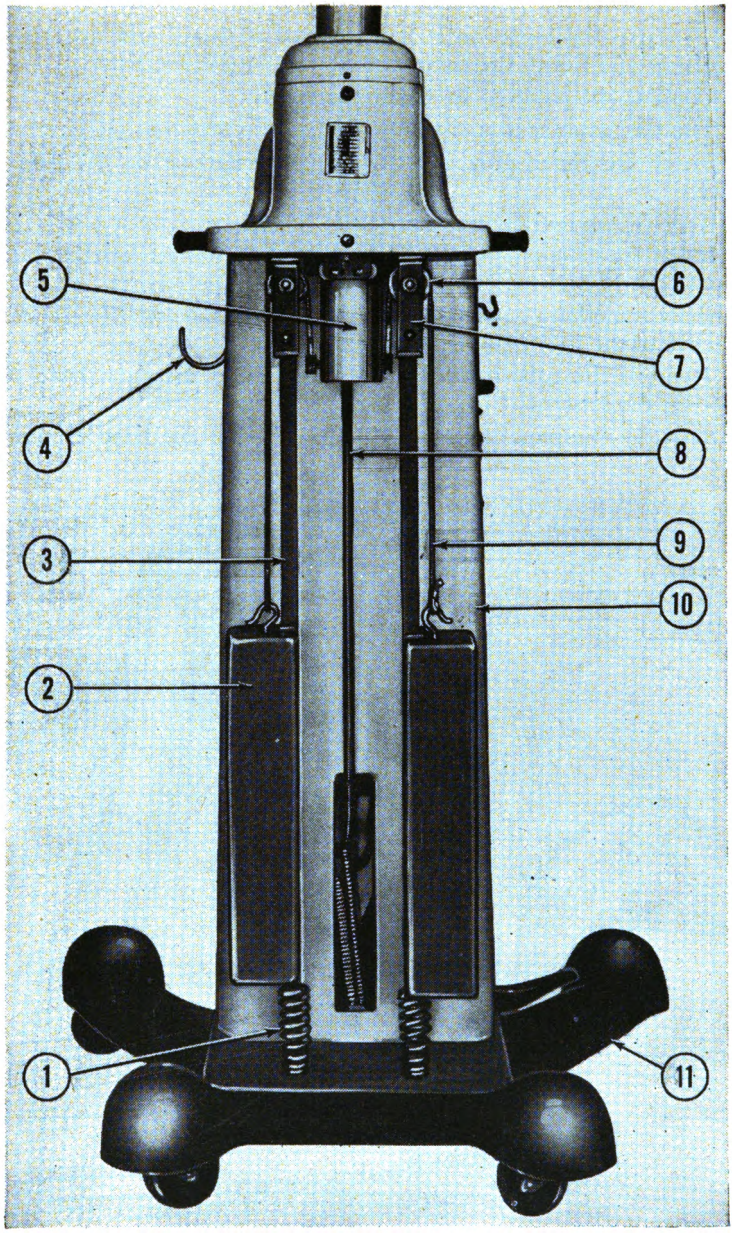
(7) Hook the stranded wire cables (fig. 12, (9)) that are attached to the vertical column, on to the counterweights by means of the hooks.

**c.** Remove the extension arm retaining pin (fig. 13, (12)) from the extension arm support (fig. 13, (13)).

**d.** Place the extension arm into position on the vertical column. (See fig. 14, (1).)

**e.** Replace the retaining pin and washers and tighten into place in the extension arm support. (See fig. 14, (2).)

**f.** Insert the terminal end of the head cable into the vertical column and feed the cable into the column. Place the cable through the opening




1. Counterweight spring.
2. Counterweight.
3. Counterweight guide rod.
4. Line cable hook.
5. Vertical column.
6. Counterweight pulley.
7. Pulley support bracket.
8. Head cable.
9. Stranded wire cable for counterweights.
10. Center panel.
11. Base.

*Figure 12. Control cabinet, Weber Model—rear panel removed.*

at the bottom of the center panel of the cabinet and through the cable spring. Carry the cable back of the terminal panel and over the auto-transformer and fasten the cable down with the cable clamps.

**g.** Connect the cable to the terminal panel.

**h.** The line cable is already connected to the terminal panel.

**i.** Insert the timer plug into the timer receptacle on the side of the cabinet.

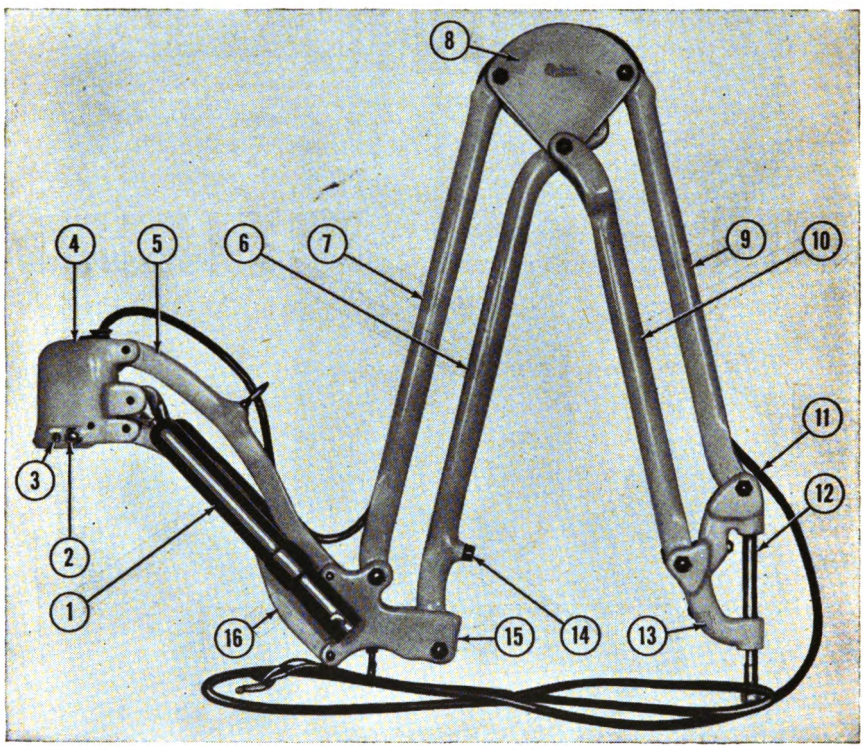
**j.** Replace the rear cabinet panel and screws.

**k.** Insert the male plug of the filament control into the female plug of the filament control and replace the front cabinet panel.

**l.** Apply a medium coating of Grease, general purpose No. 2 (WB2) to the groove of the tube head trunnion. (See fig. 15, (4).)

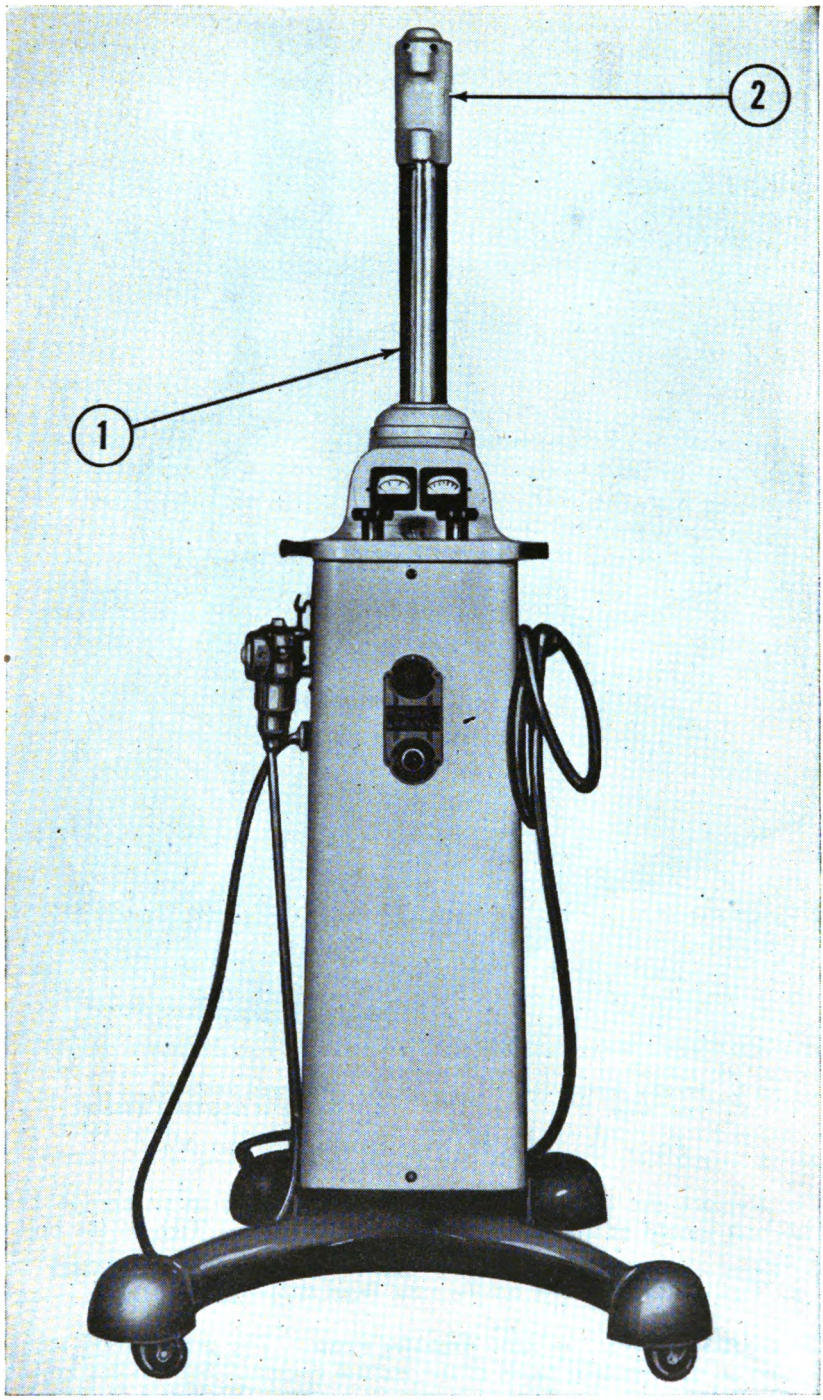
**m.** Remove the tube head retaining bolt from the tube head support and loosen the setscrew.

**n.** Slide the trunnion (fig. 15, (3)) up into the tube head support.



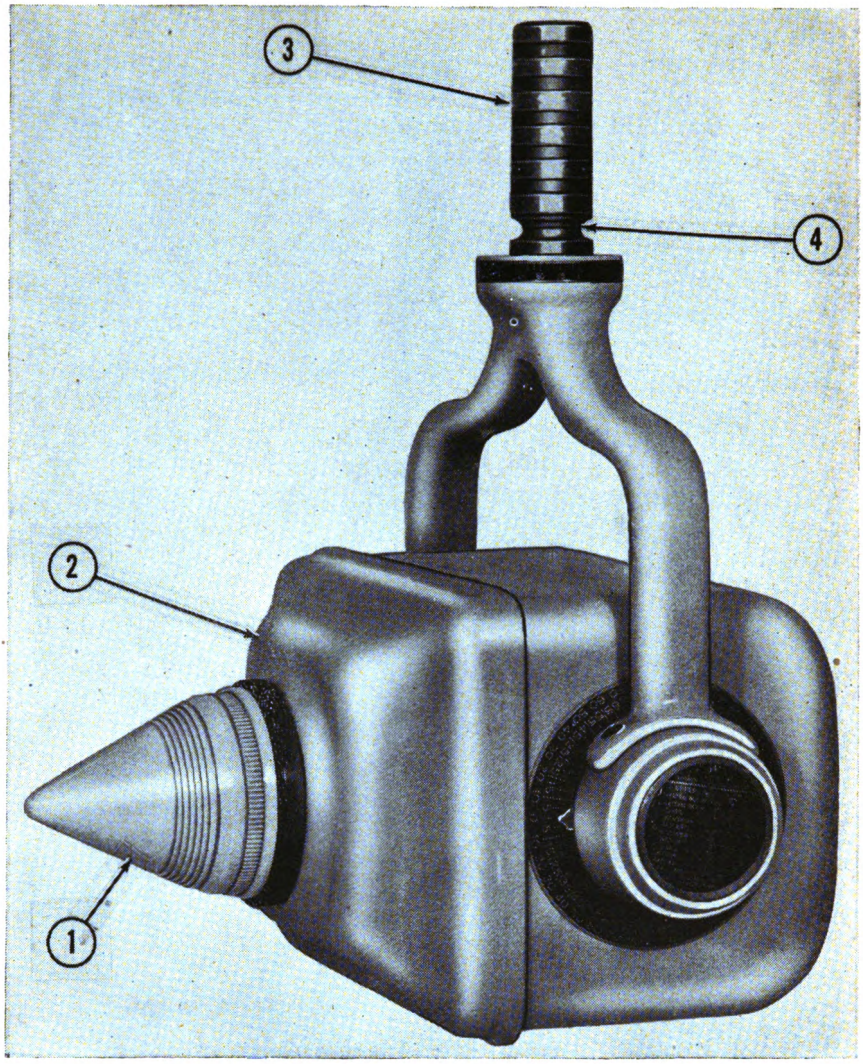

1. Twin counterbalance tube.
2. Tube head retaining bolt.
3. Tube head retaining setscrew.
4. Tube head support.
5. Upper tube support arm.
6. Front center arm.
7. Front arm.
8. Upper arm pivot head.
9. Rear arm.
10. Rear center arm.
11. Head cable.
12. Extension arm retaining pin.
13. Extension arm support.
14. Rubber bumper.
15. Lower arm pivot head.
16. Lower tube support arm.

*Figure 13. Extension arm, Weber Model.*




1. Vertical column. 2. Vertical column extension arm support.

*Figure 14. Control cabinet, Weber Model.*




1. **Bakelite dental cone.**
2. **Tube head.**
3. **Tube head trunnion.**
4. **Groove of tube head trunnion.**

*Figure 15. 6R50502, Head, complete: Weber Model.*

**o.** Replace the tube head retaining bolt removed in paragraph 24m. This bolt should fit into the groove of the trunnion. Tighten the bolt in place.

**p.** Tighten the setscrew on the tube head support.

**25. ADJUSTMENTS. a. Line adjuster strap.** The line adjuster strap is located on the terminal panel of the control cabinet. Set the line adjuster strap on the terminal most nearly corresponding to the line voltage, which is determined with a voltmeter. The voltmeter on the unit should read 110 volts at all times.

**b. A-c–d-c adjuster strap.** This strap is located on the terminal panel just to the left of the line adjuster strap. It must be set on a-c except when a rotary converter is used with direct current.

## Section XII. CONTROLS AND INSTRUMENTS

**26. CONTROLS. a. Circuit breaker.** The circuit breaker is located on the left side of the control unit. It serves as a safety device to open the operating circuit in case the tube or high tension transformer is overloaded. The contacts of the circuit breaker are reset manually by turning the circuit breaker to "on" position.

**b. Line switch.** The line switch is located in the center of the control panel. It serves to open and close both sides of the incoming line to the autotransformer.

**c. Filament control.** The filament control is located on the front panel of the cabinet. It serves to regulate the filament current to the X-ray tube. This control is of the rheostat type and can be moved during exposure.

**d. Kilovolt selector.** The kilovolt selector switch is a 6 point switch located at the right side of the control panel. It serves to regulate the kilovoltage during exposure. This control must not be moved during exposure or damage to the equipment will result.

**e. Line compensator switch.** The line compensator switch is located at the left side of the control panel. It serves to compensate for variations in the incoming line voltage. It is a nine point selector switch.

**f. Line adjuster strap.** See paragraph 25a.

**g. A-c–d-c adjuster strap.** See paragraph 25b.

**h. Timer.** The timer is hung from a hook on the extension arm and is plugged in the timer receptacle on the left side of the control unit. It has a range from ¼ to 12 seconds, and is used to determine the exposure time for radiography.

**27. INSTRUMENTS. a. Voltmeter.** The voltmeter is located at the upper right side of the control panel. The number 110 is printed in red. The meter should indicate 110 volts under load at all settings.

Note. Some units have the voltmeter and milliammeter mounted in one meter housing and other units have them mounted as individual meters.

**b. Milliammeter.** The milliammeter is located at the upper left of the control panel. During exposure the milliammeter indicates the amount of current passing through the X-ray tube. Do not operate over 10 MA.

**c. Pilot light.** The pilot light is located on the front panel below the filament control and will light when the line switch and circuit breaker are "on."

## Section XIII. OPERATION

**28. RADIOGRAPHY. a.** The tube should be properly positioned with respect to the patient.

**b.** Turn the circuit breaker and line switch to "on" position. The voltmeter should now indicate and the pilot lamp should light.

**c.** Adjust the line voltage compensator to read 110 volts under load.

**d.** Adjust the kilovoltage selector switch to the desired kilovoltage.

**e.** Adjust the filament control to the desired milliamperage.

**f.** Set the timer for the desired time by adjusting the indicator to time values marked on the dial. Care should be taken not to press the timer push button on the top of the timer case until exposure is desired.

**g.** Press the push button at the top of the timer for the exposure. If the MA values are higher than desired, turn the filament control counterclockwise. If the MA values are lower than desired, turn the filament control clockwise.

***Caution:*** The 60 cycle unit, Weber Model, must be used only on 60 cycles. A 50 cycle stabilizer must be used with 50 cycle current or use Medical Department Item No. 6088010.

**29. FLUOROSCOPY.** There are no provisions for fluoroscopy with this unit

# MAINTENANCE INSTRUCTIONS

## Section XIV. GENERAL

**30. SCOPE.** Part Three contains information for 1st and 2d echelon maintenance. It contains information needed for service, as well as description of major units and their function in relation to other components of the equipment. It is divided into three parts: Part Three–A, Maintenance Instructions, Fischer Model; Part Three–B, Maintenance Instructions, X-ray Mfg. Corporation Model; Part Three–C, Maintenance Instructions, Weber Model.

# MAINTENANCE INSTRUCTIONS

# FISCHER MODEL

## Section XV. LUBRICATION

**31. SEMIANNUALLY. a. Bronze swivel bearing.** (1) Remove all old grease from the bronze swivel bearing located at the top of the vertical column.

(2) Apply a heavy coating of grease, general purpose, No. 2 (WB2).

**b. Ball bearings.** Apply a small amount of grease, general purpose, No. 2 (WB2).

**c. Gear assembly and screw** (fig. 16, (6) and (8)). Apply a medium coating of grease, general purpose, No. 2 (WB2).

**d. Extension arms and counterweight pulleys.** Apply a few drops of oil, lubricating, preservative, special (PS) to extension arm joints and counterweight pulleys. (See fig. 17, (5).)

**e. Casters.** Apply a few drops of oil, lubricating, preservative, special (PS).

## Section XVI. PREVENTIVE MAINTENANCE SERVICES

**32. OPERATOR MAINTENANCE (1ST ECHELON). a. Before operation.** The unit should be cleaned of any dirt that has collected.

**b. After operation.** Check to see that the unit is turned "off."

**33. ORGANIZATIONAL MAINTENANCE (2D ECHELON) (MONTHLY) a.** Check for proper operation of the meters.

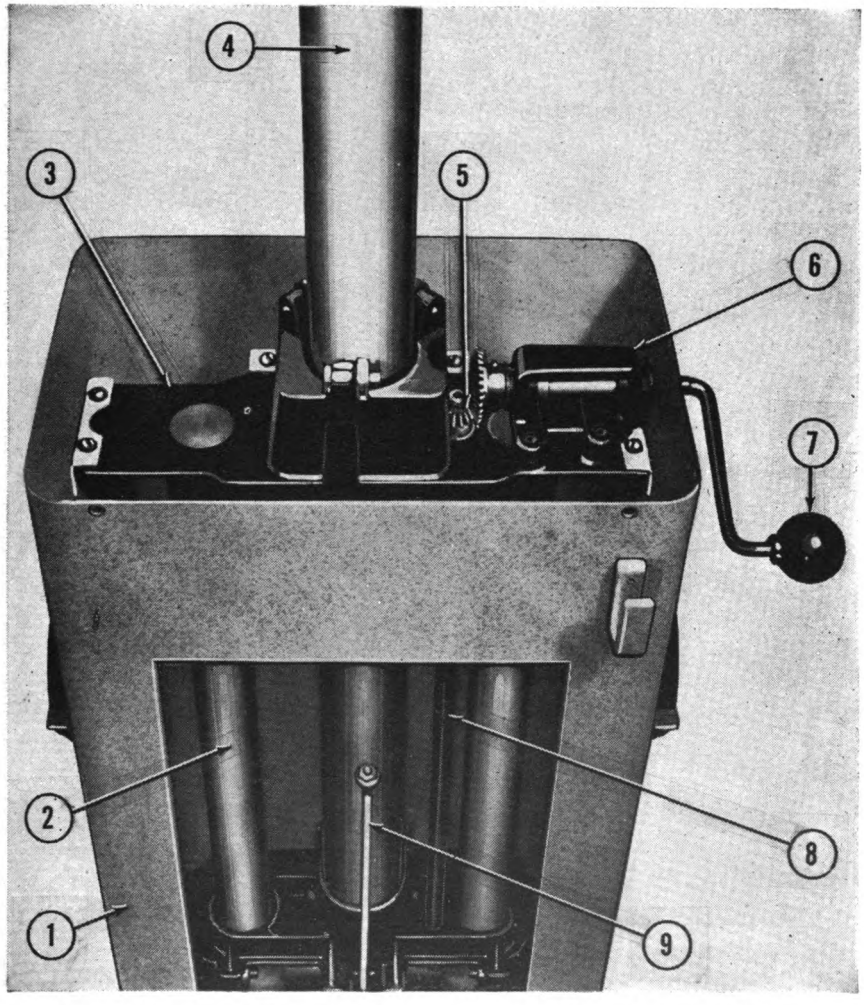
**b.** Check for proper operation of the circuit breaker and relay.

## Section XVII. TROUBLE SHOOTING

**34. ELECTRICAL. a. If the kilovoltmeter does not indicate.**

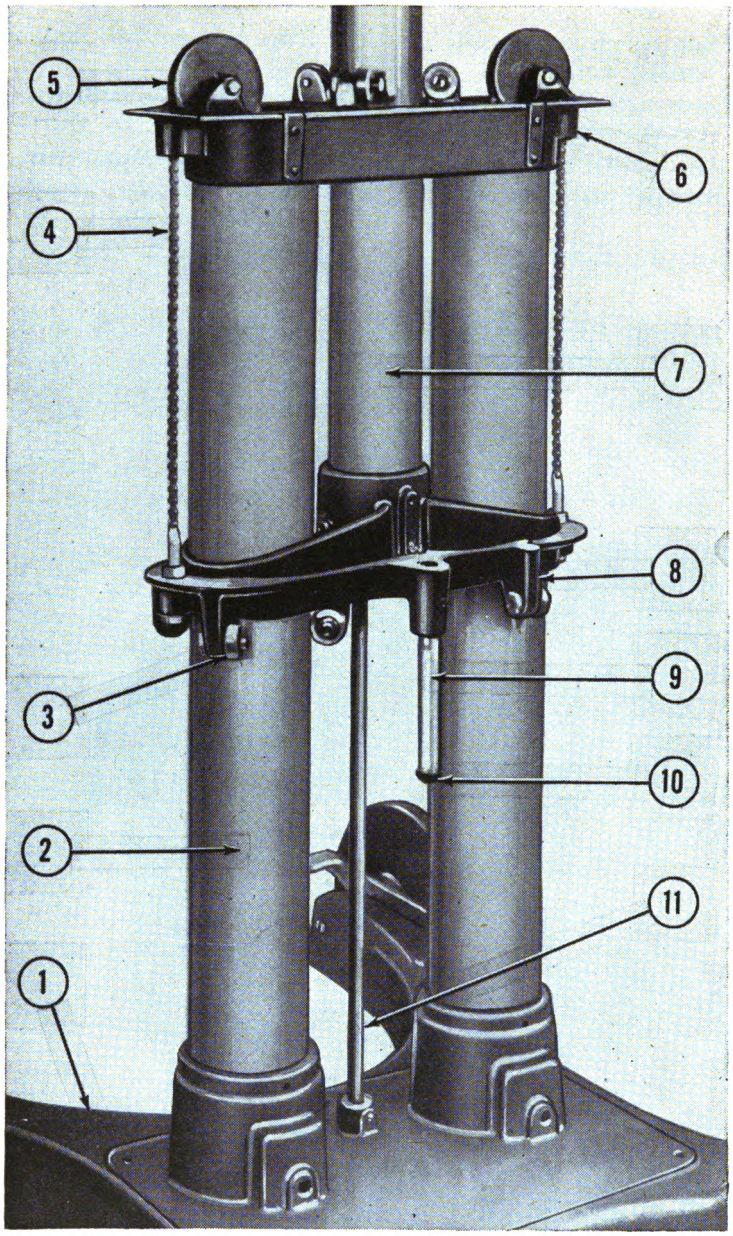
| *Possible causes* | *Possible remedies* |
|---|---|
| (1) Line cable improperly plugged in supply line. | (1) Plug line cable in properly. |
| (2) Weight of line cable may pull plug out of receptacle. | (2) Check plug and receptacle. |
| (3) Defective line plug. | (3) Replace line plug. |
| (4) No voltage at source of supply. | (4) Check source of supply. |

| *Possible causes* | *Possible remedies* |
|---|---|
| (5) Main switch and circuit breaker not "on." | (5) Turn both to "on" position. |
| (6) Loose connections on terminal panel. | (6) Tighten all connections. |
| (7) Line adjuster strap loose. | (7) Tighten line adjuster strap. |
| (8) Damaged or broken wires. | (8) Repair all wires, or refer to higher echelon. |
| (9) Defective meter. | (9) Replace meter. (See par. 35.) |




1. Lower section of control cabinet.
2. Guide rod.
3. Vertical column upper tie casting.
4. Vertical column.
5. Raising pinion.
6. Gear raising assembly.
7. Crank handle knob.
8. Raising screw.
9. Vertical column stop rod.

*Figure 16. Control cabinet, Fischer Hand Crank Model—lower section.*




1. Base.
2. Vertical column guide tube.
3. Ball bearing.
4. Counterweight chain assembly.
5. Counterweight pulley.
6. Vertical column upper tie casting.
7. Vertical column.
8. Vertical column lower tie casting.
9. Vertical movement bumper shaft.
10. Vertical movement rubber bumper.
11. Vertical column lock rod.

*Figure 17. Counterbalance assembly, Fischer Model.*

**b. If the milliammeter does not indicate during exposure.**

| *Possible causes* | *Possible remedies* |
|---|---|
| (1) X-ray filament not lighted. | (1) Replace tube head or check connections. |
| (2) Loose terminal connections. | (2) Tighten terminal connections on terminal board. |
| (3) Timer improperly connected. | (3) Connect so that good contact is established. (See par. 9i.) |
| (4) Defective meter. | (4) Replace meter. (See par. 35.) |

**c. If circuit breaker "kicks out" constantly.**

| *Possible causes* | *Possible remedies* |
|---|---|
| (1) Filament control adjusted too high. | (1) Turn filament control counter-clockwise. |
| (2) Defective X-ray tube. | (2) Replace tube head assembly. |
| (3) Short circuit within the control. | (3) Repair defective wiring and poor connections, or refer to higher echelon. |
| (4) Break-down of insulation within the high tension transformer. | (4) Replace tube head assembly. |
| (5) Defective circuit breaker. | (5) Replace circuit breaker. (See par. 36.) |

## Section XVIII. MAINTENANCE OPERATIONS

**35. TO REPLACE METERS.** **a.** If meters (fig. 18, (5) and (6)) are defective as indicated by operation or physical damage they may be replaced as follows:

(1) Remove the three screws retaining the meter.

(2) Remove the defective meter, observing and labeling the connections as it is removed.

(3) Take new meter and make necessary connections.

(4) Replace retaining screws.

**b.** Replace one meter at a time so it will not be possible to interchange meters.

**c.** A shunt may be placed across the terminals of the milliammeter if the meter is defective and no replacement parts available. It is advisable to use low milliamperage values in this event.

**36. TO REPLACE CIRCUIT BREAKER.** **a.** Remove the control panel.

**b.** Remove the screws holding the circuit breaker in place.

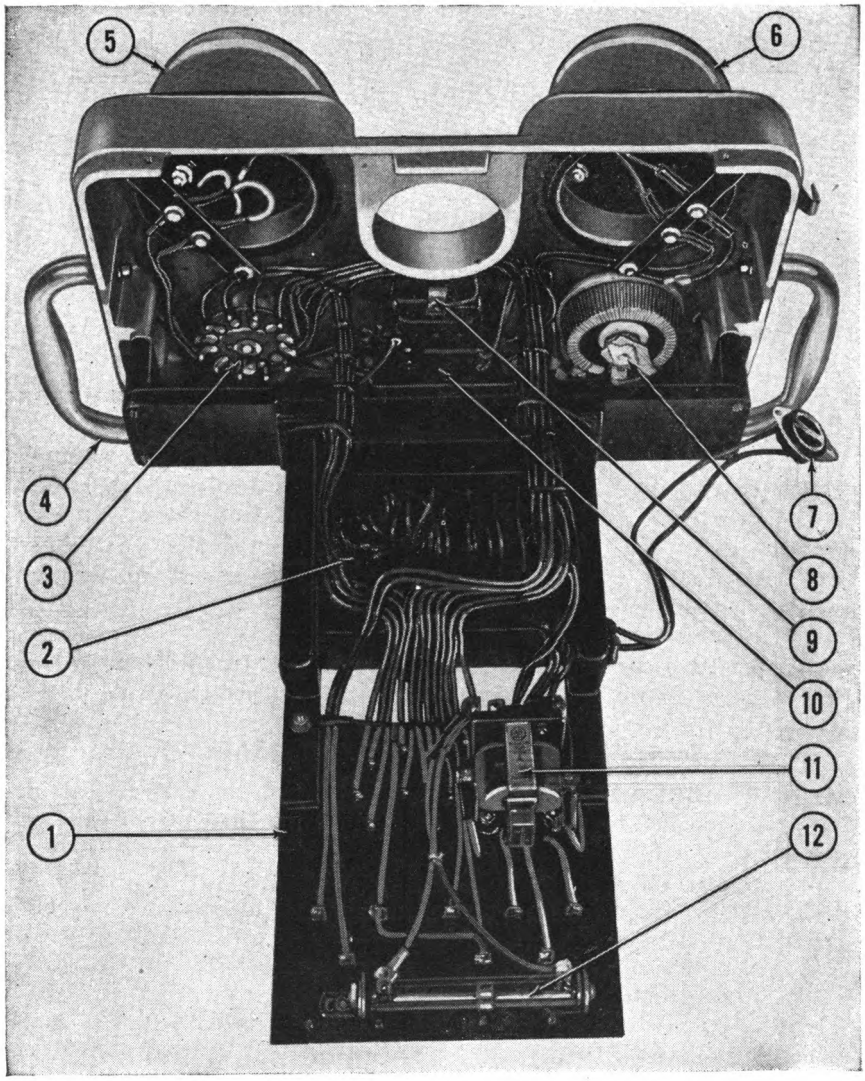
**c.** Remove the circuit breaker observing and labeling the connections.

**d.** Connect the new circuit breaker and reassemble.

**37. TO REPLACE LINE SWITCH.** **a.** Unscrew the knurled screw holding the line switch in place.

**b.** Remove the line switch observing the connections.

**c.** Connect the new line switch and reassemble.




1. Terminal panel.
2. Autotransformer.
3. Kilovoltage control switch.
4. Control unit cabinet handle.
5. Voltmeter.
6. Milliammeter.
7. Female receptacle for timer.
8. Filament control rheostat.
9. Pilot bulb socket.
10. Circuit breaker.
11. Relay.
12. 5 ohm resistor.

*Figure 18. Control assembly, Fischer Model—rear view.*

**38. TO REPLACE RELAY.** **a.** Remove the screws holding the relay (fig. 18, (11)) in place.

**b.** Remove the relay observing and labeling the connections.

**c.** Replace relay and reassemble.

**39. TO ADJUST COUNTERWEIGHT CHAINS.** **a.** Loosen the knurled lock screw on the vertical column and allow the vertical column to rise to the upper limits of travel and if slack is observed in either chain it must be adjusted.

**b.** Adjust as follows:

(1) Loosen lock nuts on the special screw which is part of the chain assembly and passes through the upper support casting.

(2) Adjust the nuts on these special screws to increase tension, be sure that the chain is free from all twisting.

(3) Tighten lock nuts to prevent rotation of the screw.

**40. TO REPLACE PILOT BULB.** **a.** Remove the white jewel in front of the pilot bulb.

**b.** Remove pilot bulb by pushing in and turning counterclockwise one-half turn.

**c.** Replace pilot bulb.

**d.** Replace white jewel.

**41. TO ADJUST COUNTERBALANCE SPRINGS OF EXTENSION ARM.** **a.** Unscrew the knurled caps from the tubes which house the springs. The tip of each cap is perforated and by inverting the cap, it will slide down over the adjusting nut at the upper end of the spring housing.

**b.** Adjust both springs so that the stress will support the tube head for proper positioning.

**c.** Replace the caps.

# MAINTENANCE INSTRUCTIONS

## X-RAY MFG. CORPORATION MODEL

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### Section XIX. LUBRICATION

**42. SEMIANNUALLY. a. Bearing on arm support tube of vertical column.** Apply heavy coating of grease, general purpose No. 2 (WB2).

**b. Ball bearings.** Apply small amount of grease, general purpose No. 2 (WB2).

**c. Extension arms and counterbalance pulleys.** Apply a few drops of oil, lubricating, preservative, special (PS).

**d. Casters.** Apply a few drops of oil, lubricating, preservative, special (PS).

### Section XX. PREVENTIVE MAINTENANCE SERVICES

**43. OPERATOR MAINTENANCE (1ST ECHELON). a. Before operation.** The unit should be cleaned of any dirt that has collected.

**b. After operation.** Check to see that the unit is turned "off."

**44. ORGANIZATIONAL MAINTENANCE (2D ECHELON) (MONTHLY). a.** Check for proper operation of the meters.

**b.** Check for proper operation of the circuit breaker and relay.

### Section XXI. TROUBLE SHOOTING

**45. ELECTRICAL. a. If the voltmeter does not indicate.**

| *Possible causes* | *Possible remedies* |
|---|---|
| (1) Line cable improperly plugged into supply line. | (1) Plug line cable in properly. |
| (2) Weight of line cable may pull plug out of receptacle. | (2) Check plug and receptacle. |
| (3) Defective line plug. | (3) Replace line plug. |
| (4) No voltage at source of supply. | (4) Check source of supply. |
| (5) Circuit breaker not "on." | (5) Turn to "on" position. |
| (6) Loose connections on terminal panel. | (6) Tighten all connections. |
| (7) Line adjuster strap loose. | (7) Tighten line adjuster strap. |
| (8) Damaged or broken wires. | (8) Repair all wires, or refer to higher echelon. |
| (9) Defective meter. | (9) Replace meter. (See par. 46.) |

**b. If the milliammeter does not indicate during exposure.**

| *Possible causes* | *Possible remedies* |
|---|---|
| (1) X-ray filament not lighted. | (1) Replace tube head or refer to higher echelon. |
| (2) Loose terminal connections. | (2) Tighten terminal connections on terminal board. |
| (3) Timer improperly connected. | (3) Connect so that good contact is established. |
| (4) Defective meter. | (4) Replace meter. (See par. 46.) |

**c. If circuit breaker "kicks out" constantly.**

| *Possible causes* | *Possible remedies* |
|---|---|
| (1) Filament control adjusted too high. | (1) Turn filament control counterclockwise. |
| (2) Defective X-ray tube. | (2) Replace tube head assembly. |
| (3) Short circuit within the control. | (3) Repair all wiring and poor connections. |
| (4) Break-down of insulation within the high tension transformer. | (4) Replace tube head assembly. |
| (5) Defective circuit breaker. | (5) Replace circuit breaker. (See par. 47.) |

## Section XXII. MAINTENANCE OPERATIONS

**46. TO REPLACE METERS. a.** If meters are defective as indicated by operation or physical damage, they may be replaced as follows:

(1) Remove the three screws retaining the meter.

(2) Remove the defective meter, observing and labeling the connections as it is removed.

(3) Take new meter and make necessary connections.

(4) Replace retaining screws.

**b.** Replace one meter at a time so it will not be possible to interchange meters.

**c.** A shunt may be placed across the terminals of the milliammeter if the meter is defective and no replacement part is available. It is advisable to use low milliamperage values in this event.

**47. TO REPLACE CIRCUIT BREAKER. a.** Remove the front cabinet panel. It is held in place by the decorative bands and screws.

**b.** Remove the screws holding the circuit breaker in place.

**c.** Remove the circuit breaker observing and labeling the connections.

**d.** Connect new circuit breaker and reassemble.

**48. TO REPLACE RELAY. a.** Remove the front cabinet panel. (See fig. 19.)

**b.** Remove the screws holding the relay (fig. 19, (10)) in place.

**c.** Remove the relay observing and labeling the connections.

**d.** Replace with new relay and reassemble.

**49. TO REPLACE PILOT BULB. a.** Remove the white jewel (fig. 19, (9)) in front of the pilot bulb.

**b.** Remove the pilot bulb by unscrewing counterclockwise.

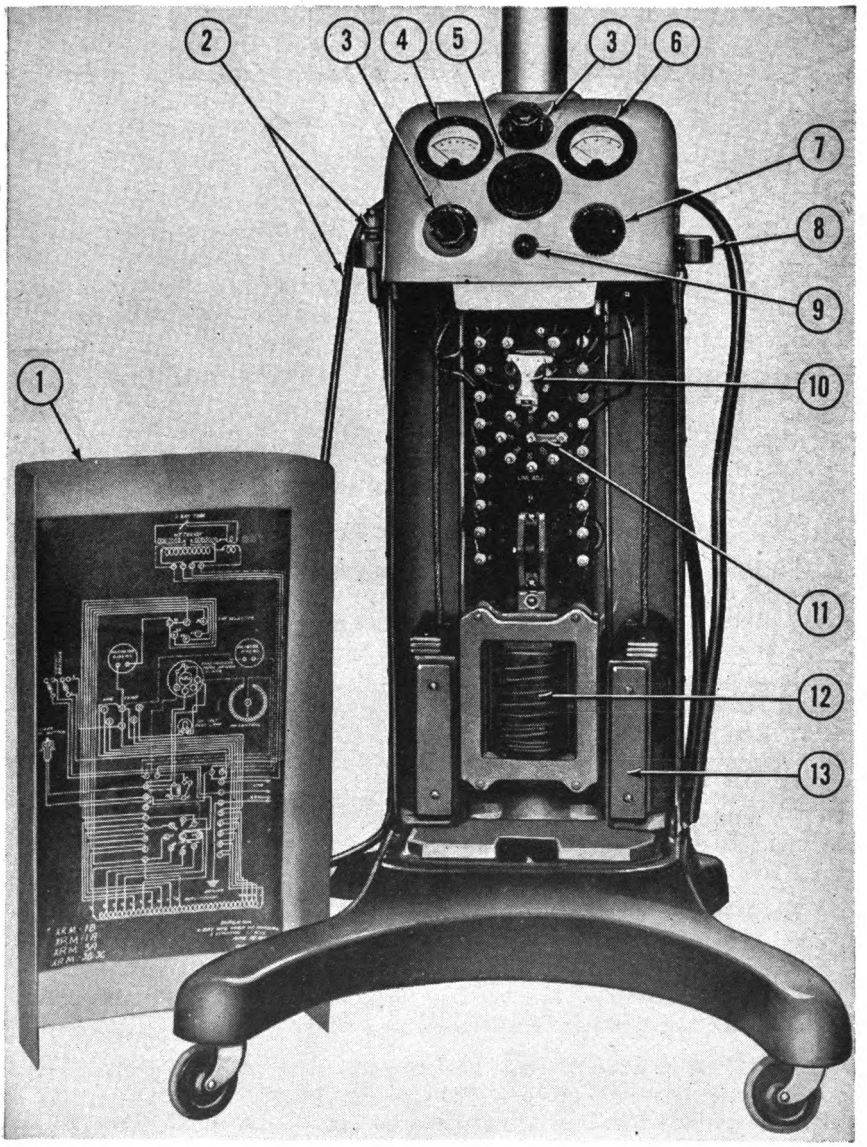
**c.** Replace with a SR00057 pilot bulb.

**d.** Replace white jewel.

**50. TO REPLACE SYNCHRONOUS TIMER.** **a.** Remove the two screws retaining the timer. (See fig. 19, (5).)

**b.** Remove the timer observing and labeling the connections.

**c.** Replace with new timer and reassemble.




1. Control unit panel, front half.
2. Timer push button.
3. 5 point selector switch.
4. Voltmeter.
5. Synchronous timer.
6. Milliammeter.
7. Filament control rheostat.
8. Control unit cabinet handle.
9. White jewel.
10. Contractor relay.
11. Line adjuster strap.
12. Autotransformer.
13. Counterweight.

*Figure 19. Control cabinet, X-ray Mfg. Corporation Model—front panel removed.*

# MAINTENANCE INSTRUCTIONS

## WEBER MODEL

### Section XXIII. LUBRICATION

**51. SEMIANNUALLY. a. Ball bearings.** Apply light coat of grease, general purpose No. 2 (WB2).

**b. Extension arms and counterbalance pulleys.** Apply 3 or 4 drops of oil, lubricating, preservative, special (PS).

**c. Casters.** Apply 3 or 4 drops of oil, lubricating, preservative, special (PS).

**d. Tube head trunnion.** Apply a medium coating of grease, general purpose No. 2 (WB2) to the groove of the trunnion.

### Section XXIV. PREVENTIVE MAINTENANCE SERVICES

**52. OPERATOR MAINTENANCE (1ST ECHELON). a. Before operation.** The unit should be cleaned of any dirt that has collected.

**b. After operation.** Check to see that the unit is turned "off."

**53. ORGANIZATIONAL MAINTENANCE (2D ECHELON) (MONTHLY). a.** Check for proper operations of the meters.

**b.** Check for proper operations of the circuit breaker.

### Section XXV. TROUBLE SHOOTING

**54. ELECTRICAL. a. If the voltmeter does not indicate.**

| *Possible causes* | *Possible remedies* |
|---|---|
| (1) Line cable improperly plugged into supply line. | (1) Plug line cable in properly. |
| (2) Weight of line cable may pull out receptacle. | (2) Check plug and receptacle. |
| (3) Defective line plug. | (3) Replace line plug. |
| (4) No voltage at source of supply. | (4) Check source of supply. |
| (5) Line switch or circuit breaker not on. | (5) Turn both to "on" position. |
| (6) Loose connections on terminal panel. | (6) Tighten all connections. |
| (7) Damaged or broken wires. | (7) Repair all damaged or broken wires or refer to higher echelon. |
| (8) Defective meter. | (8) Replace meter. (See par. 55.) |

**b. If the milliammeter does not indicate during exposure.**

| *Possible causes* | *Possible remedies* |
|---|---|
| (1) X-ray filament not lighted. | (1) Replace tube head or refer to higher echelon. |
| (2) Loose terminal connections. | (2) Tighten terminal connections on terminal board. |
| (3) Timer improperly connected. | (3) Connect so that good contact is established. |
| (4) Defective meter. | (4) Replace meter. (See par. 55.) |
| (5) Stabilizer burned out. | (5) Refer to higher echelon. |

**c. If the circuit breaker "kicks out" constantly.**

| *Possible causes* | *Possible remedies* |
|---|---|
| (1) Filament control adjusted too high. | (1) Turn filament control counterclockwise. |
| (2) Defective X-ray tube. | (2) Replace tube head assembly. |
| (3) Short circuit within the control. | (3) Repair all wiring and poor connection or refer to higher echelon. |
| (4) Break-down of insulation within the high tension transformer. | (4) Replace tube head assembly. |
| (5) Defective circuit breaker. | (5) Replace circuit breaker. (See par. 56.) |

## Section XXVI. MAINTENANCE OPERATIONS

**55. TO REPLACE METERS. a. Replacing individually mounted meters** (fig. 20, (8) and (9)). (1) Remove the two screws retaining the meter mounting plate.

(2) Remove the four screws retaining the meter to be replaced.

(3) Remove the meter observing and labeling the connections as it is removed.

(4) Take the new meter and make necessary connections.

(5) Replace the meter retaining screws.

(6) Replace the meter mounting plate and screws.

**b. Replacing combination meter with individually mounted meters.**

(1) Remove the four screws retaining the meter mounting plate.

(2) Obtain an individual meter mounting plate (6R50552).

(3) Disconnect the wires from M.A. meter side, put the wires through the M.A. side (left side) of the meter mounting plate and connect new M.A. meter.

(4) Disconnect the wires from the voltmeter side of the combination meter, put the wires through the voltmeter side (right side) of the meter mounting plate and connect new voltmeter.

(5) Mount the meters to the plate by means of the eight 6R50619 screws.

(6) Mount the meter retaining plate with two SR00541 screws.

**56. TO REPLACE CIRCUIT BREAKER. a.** Remove the front panel from the control cabinet.

**b.** Remove the screws holding the circuit breaker (fig. 20, (6)), in place.

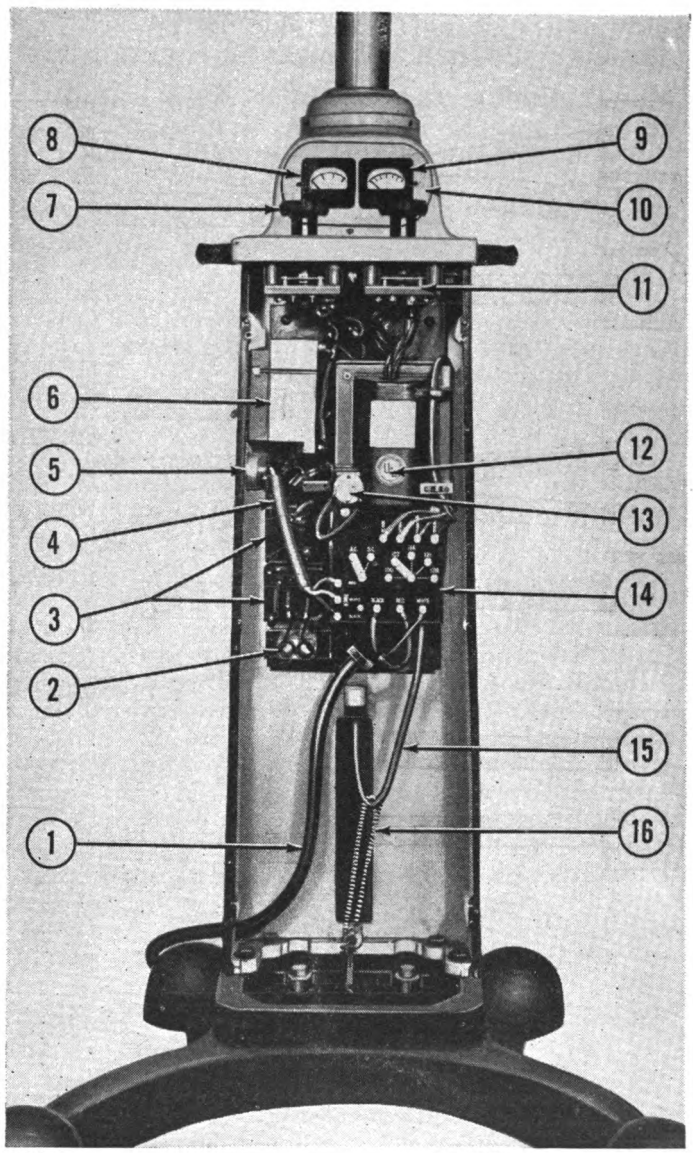
**c.** Remove the circuit breaker observing and labeling the connections.

**d.** Connect new circuit breaker and reassemble.

**57. TO REPLACE PILOT BULB.** **a.** Remove the front panel from the control cabinet.

**b.** Remove and replace pilot bulb. (See fig. 20, (13).)

**c.** Replace front panel.




1. Line cable.
2. Capacitor assembly.
3. Stabilizer.
4. Timer receptacle to terminal board cable.
5. Timer receptacle.
6. Circuit breaker.
7. Control knob.
8. Milliammeter.
9. Voltmeter.
10. Individual meter retaining plate.
11. 6 point selector switch.
12. Autotransformer.
13. 6 watt, 115v. bulb.
14. Terminal panel.
15. Head cable.
16. Cable spring.

*Figure 20. Control cabinet, Weber Model with front panel removed.*

## Section I. SHIPMENT AND STORAGE, FISCHER MODEL

**58. DISASSEMBLING. a. To remove tube head assembly.** (1) Be certain the vertical column is locked securely at its upper limits of travel.

(2) Remove the three support screws. Be certain to hold the tube head assembly securely.

(3) The tube head assembly will now slide down and become disengaged.

(4) Place the tube head assembly in a safe place.

**b. To remove extension arm assembly.** (1) Unscrew the three screws holding the retaining washer of the extension arm support housing.

(2) Disconnect the tube head cable from the terminal panel.

(3) Remove the cable from the extension arm support housing.

(4) Remove the retaining washer from the cable.

(5) Loosen the setscrew which locks the wing screw in the arm support housing.

(6) Remove the extension arm and place in safe place.

**59. PACKING AND CRATING. a.** The unit is packed in two crates, the tube head assembly in a small crate and the control cabinet, extension arm, and accessories in a large crate.

**b.** The tube head is placed in a small wooden crate with excelsior or other packing materials and is secured firmly in place by the packing material or by cleats and boards.

**c.** The control cabinet is placed in the large crate. The vertical column is pushed down and may be either tied down with rope or wire with the cabinet properly padded against rubbing, or can be held down by a 2 x 4 nailed through the crate and using a cleat above the 2 x 4 at each end. The cabinet must be blocked against lateral motion of the load.

**d.** Place the extension arm into the crate so that it sets down into the "U" space formed by the two legs of the base. Block the extension arm into place with boards and cleats using packing material to protect the finish.

**e.** Wrap the accessories and fasten them into the large box so they will not move.

## Section II. SHIPMENT AND STORAGE, X-RAY MFG. CORPORATION MODEL

**60. DISASSEMBLING. a. To remove tube head assembly.** (1) Be certain to hold the tube head assembly securely.

(2) Loosen the bolt which holds the tube head retaining clamp against the trunnion.

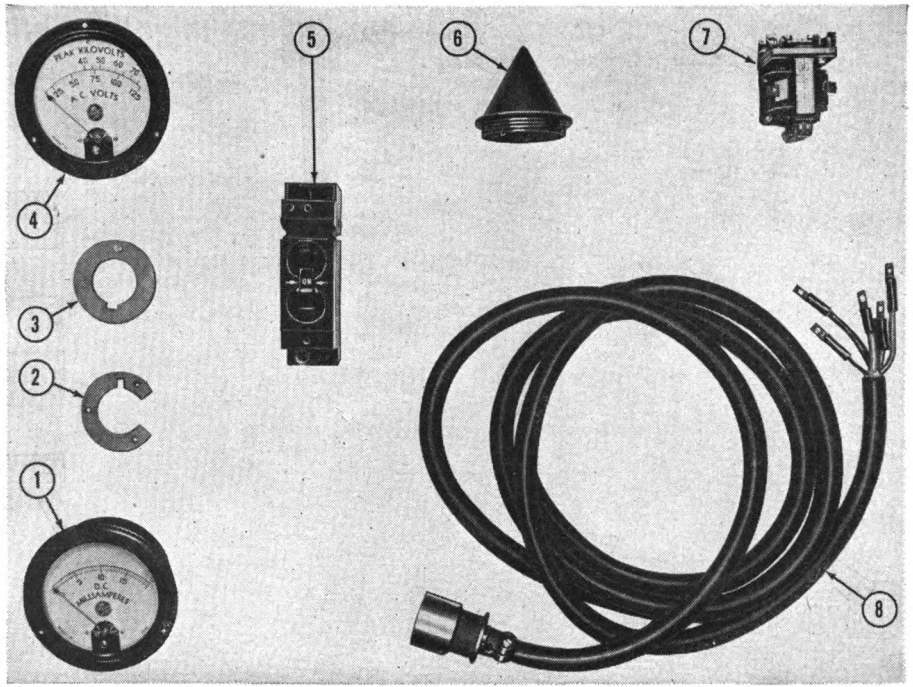
(3) Disconnect the plugs.

(4) Remove the tube head and put in a safe place.

**b. To remove extension arm assembly.** (1) Disconnect the plugs.

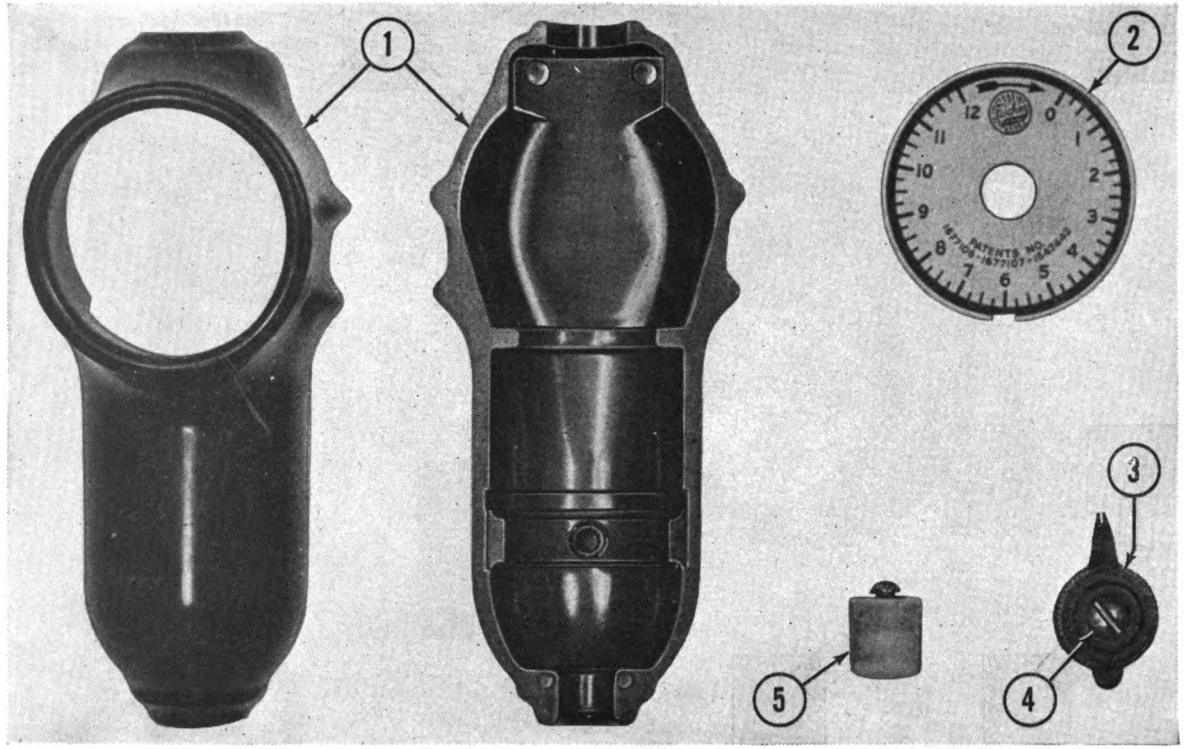
(2) Lift the extension arm off of the vertical column support tube.

**61. PACKING and CRATING.** See paragraph 59.




| Med. Dept. Item | Nomenclature | Med. Dept. Item | Nomenclature | Med. Dept. Item | Nomenclature |
|---|---|---|---|---|---|
| 6R50006 | Milliammeter. | 6R50038 | Ring, rotating, retaining assembly. | 6R50374 | Cone, dental, bakelite. |
| 6R50196 | Washer, stop and retaining, tube head support. | 6R50004 | Voltmeter. | 6R50008 | Relay. |
| | | 6R50014 | Breaker, circuit. | 6R50012 | Cable, head. |

*Figure 21. Parts frequently replaced on Fischer Model.*




| Med. Dept. Item | Nomenclature |
|---|---|
| 6R50388 | Case, hand timer. |
| 6R50404 | Dial, hand timer. |

| Med. Dept. Item | Nomenclature |
|---|---|
| 6R50406 | Knob, dial, hand timer. |
| 6R50408 | Nut, retaining, dial knob, hand timer. |

| Med. Dept. Item | Nomenclature |
|---|---|
| 6R50398 | Push button, hand timer. |

*Figure 22. Parts frequently replaced on Fischer timer.*

## Section III. SHIPMENT AND STORAGE, WEBER MODEL

**62. DISASSEMBLING. a. To remove tube head assembly.** (1) Remove the setscrew and bolt which retains the tube head assembly. Be certain to hold the tube head securely.

(2) The tube head assembly will now slide down and become disengaged.

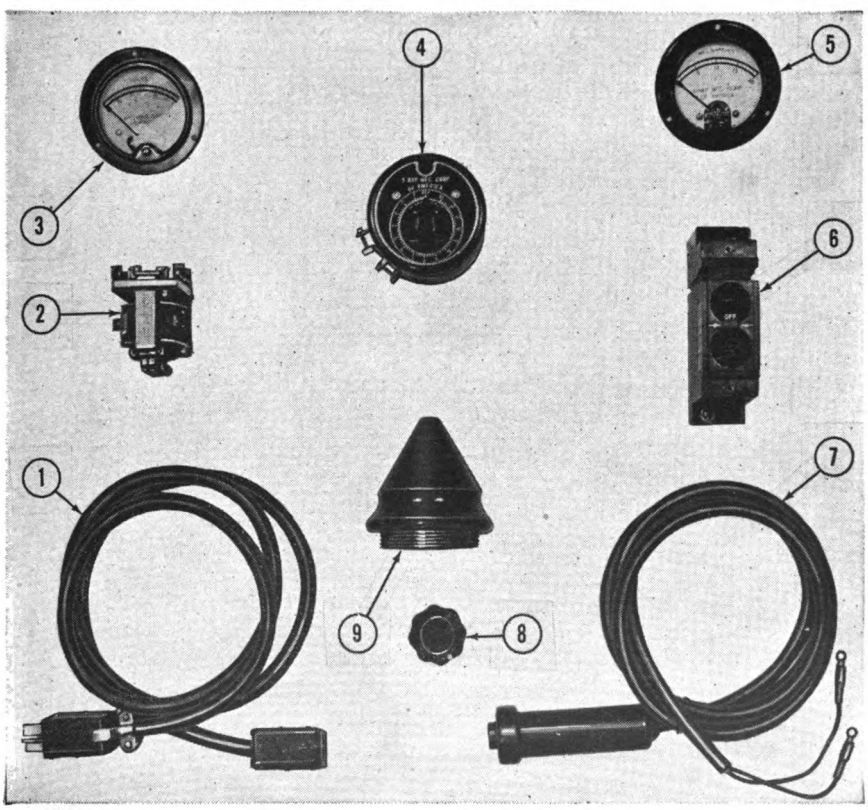
**b. To remove extension arm assembly.** (1) Disconnect the tube head cable from the terminal panel.

(2) Remove the cable from the vertical column.

(3) Remove the extension arm retaining pin and remove the extension arm.

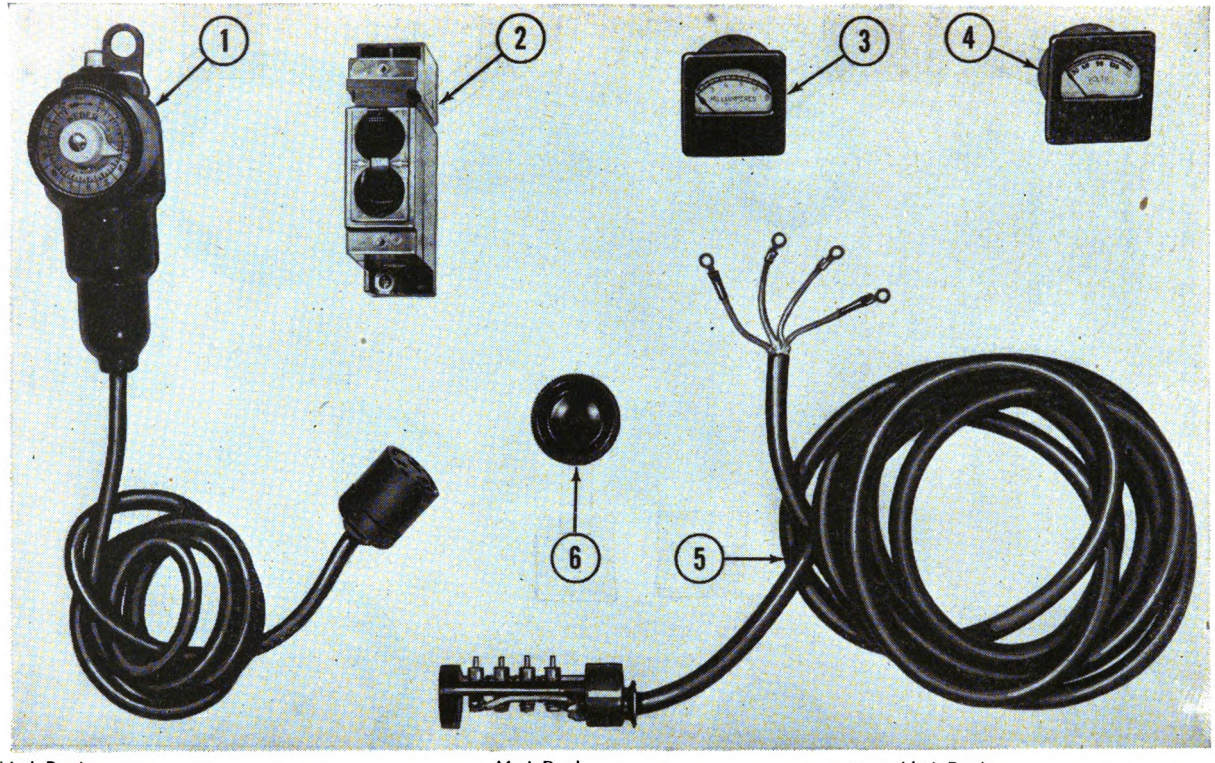
(4) Replace the pin in the extension arm support.

**63. PACKING AND CRATING.** See paragraph 59.




| Med. Dept. Item | Nomenclature | Med. Dept. Item | Nomenclature |
|---|---|---|---|
| 6R51010 | Cable, head, 4 wire, complete. | 6R51008 | Breaker, circuit. |
| 6R51088 | Relay, contactor. | 6R51014 | Button, push, timer, complete. |
| 6R51004 | Voltmeter. | 6R51022 | Knob, control. |
| 6R51012 | Timer, synchronous. | 6R51020 | Cone, bakelite. |
| 6R51006 | Milliammeter. | | |

*Figure 23. Parts frequently replaced on X-ray Mfg. Corp. Model.*




| Med. Dept. Item | Nomenclature | Med. Dept. Item | Nomenclature | Med. Dept. Item | Nomenclature |
|---|---|---|---|---|---|
| 6R50518 | Timer, complete. | 6R50506 | Milliammeter. | 6R50512 | Cable, head. |
| 6R50508 | Breaker, circuit. | 6R50504 | Voltmeter. | 6R50556 | Knob, control. |

*Figure 24. Parts frequently replaced on Weber Model.*

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